DOCUMENT RESUME

ED 269 516 UD 024 859

AUTHOR Oxford-Carpenter, Rebecca; And Others
TITLE Demographic Projections to the Year 2000 of Limited English Proficient Hispanic Accessions in the U.S. Army. ARI Research Report 1349 Revised.
INSTITUTION Army Research Inst. for the Behavioral and Social Sciences, Alexandria, Va.
REPORT NO ARI-RR-1349
PUB DATE Apr 84
GRANT DAAG-29-81-0-0100
NOTE 60p.; Supersedes ED 244 040.
PUB TYPE Statistical Data (110) -- Reports - Research/Technical (143)

EDRS PRICE MF01/PC03 Plus Postage.
DESCRIPTORS Armed Forces; *Demography; *Hispanic Americans; *Limited English Speaking; *Military Personnel; *Population Trends; Sex Differences
IDENTIFIERS *Army; *Demographic Projections

ABSTRACT

This report presents background, methodology, findings, and implications regarding the generation of demographic projections to the year 2000 of limited-English-proficient (LEP) Hispanic accessions in the U.S. Army who are eligible for English-as-a-Second-Language (ESL) instruction. Results show that the U.S. Hispanic population is projected to grow substantially between 1980 and the end of the century. The growth rate for Hispanics in the accession age range of 17.35 is projected to be over three times the rate for Blacks. In 1961, Hispanic accession rates were higher for males than females and were highest of all for insular Puerto Ricans. These accession rates were patterned differently from projections, with non-Puerto Rican Hispanics projected to have higher accession rates than Puerto Ricans in the period 1980-2000. ESL eligibility rates in 1981 were found to be much higher for Hispanic males than females and Puerto Ricans had higher ESL eligibility rates than other Hispanics, consistent with projections. The proportion of Hispanic accessions eligible for ESL instruction was not projected to change dramatically between 1980 and the end of the century. Results point to the need for continued, high quality English instruction, suitable selection and classification procedures, awareness of cultural differences, and improved data collection methods. (Author/CG)

**********
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
**********

ED269516

Research Report 1349

# Demographic Projections to the Year 2000 of Limited English Proficient Hispanic Accessions in the U. S. Army

**Rebecca Oxford-Carpenter**
Army Research Institute

**Louis Pol**
Memphis State University

**Murray Gendell**
Georgetown University

Instructional Technology Systems Technical Area
**Training Research Laboratory**

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
☑ This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY
U.S. ARI.
TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

UD024859

U. S. Army
Research Institute for the Behavioral and Social Sciences
April 1984

Approved for public release; distribution unlimited.

# U. S. ARMY RESEARCH INSTITUTE
# FOR THE BEHAVIORAL AND SOCIAL SCIENCES

A Field Operating Agency under the Jurisdiction of the

Deputy Chief of Staff for Personnel

EDGAR M. JOHNSON
Technical Director

L. NEALE COSBY
Colonel, IN
Commander

---

Research accomplished under contract
for the Department of the Army

Battelle Laboratories

Technical Review by

Harold Wagner
Joan Harman
M.A. Fischl

NOTICES

DISTRIBUTION: Primary distribution of this report has been made by ARI. Please address correspondence concerning distribution of reports to: U.S. Army Research Institute for the Behavioral and Social Sciences, ATTN: PERI-TST, 5001 Eisenhower Avenue, Alexandria, Virginia 22333.

FINAL DISPOSITION: This report may be destroyed when it is no longer needed. Please do not return it to the U.S. Army Research Institute for the Behavioral and Social Sciences.

NOTE: The findings in this report are not to be construed as an official Department of the Army position, unless so designated by other authorized documents.

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

## REPORT DOCUMENTATION PAGE

READ INSTRUCTIONS BEFORE COMPLETING FORM

| | |
|---|---|
| 1. REPORT NUMBER: ARI Research Report 1349 | 2. GOVT ACCESSION NO. |
| 3. RECIPIENT'S CATALOG NUMBER | |
| 4. TITLE (and Subtitle): DEMOGRAPHIC PROJECTIONS TO THE YEAR 2000 OF LIMITED ENGLISH PROFICIENT HISPANIC ACCESSIONS IN THE U.S. ARMY | 5. TYPE OF REPORT & PERIOD COVERED: Final, 23 Feb - 8 July 1983 |
| | 6. PERFORMING ORG. REPORT NUMBER: -- |
| 7. AUTHOR(s): Rebecca Oxford-Carpenter, ARI; Louis Pol, Memphis State University, and Murray Gendell, Georgetown University | 8. CONTRACT OR GRANT NUMBER(s): DAAG 29-81-D-0100 |
| 9. PERFORMING ORGANIZATION NAME AND ADDRESS: U.S. Army Research Institute for the Behavioral and Social Sciences, 5001 Eisenhower Avenue, Alexandria, VA 22333-5600 | 10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS: 2Q162722A791/5110 |
| 11. CONTROLLING OFFICE NAME AND ADDRESS: U.S. Army Research Institute for the Behavioral and Social Sciences, 5001 Eisenhower Avenue, Alexandria, VA 22333-5600 | 12. REPORT DATE: April 1984 |
| | 13. NUMBER OF PAGES: 64 |
| 14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office): -- | 15. SECURITY CLASS. (of this report): Unclassified |
| | 15a. DECLASSIFICATION/DOWNGRADING SCHEDULE: -- |

16. DISTRIBUTION STATEMENT (of this Report)

Approved for public release; distribution unlimited

17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)

--

18. SUPPLEMENTARY NOTES

The April 1984 version of this report supersedes an earlier version by the same title dated October 1983. Research was conducted at ARI, but contract was handled through the Army Research Office and Battelle Laboratories, Research Triangle Park, NC 27709.

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

| | |
|---|---|
| Army accessions | Puerto Rican |
| Demographic projections | Limited English proficiency |
| Hispanic | English-as-a-second-language |
| Spanish origin | Basic Skills Education Program |
| Mexican | |

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

This report presents background, methodology, findings, and implications regarding the generation of demographic projections to the year 2000 of limited English proficient Hispanic accessions in the U.S. Army. Projections were made for males and females, various Hispanic ethnic groups, and age bands within the accession age range of 17-35. Additionally, comparisons were made with total U.S. population and Black U.S. population figures.

(Continued)

DD FORM 1 JAN 73 1473 EDITION OF 1 NOV 65 IS OBSOLETE

UNCLASSIFIED

i SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)



BEST COPY AVAILABLE

Item 20 (continued)

Results showed that the Hispanic population of the U.S. age 17-35 was projected to grow substantially between 1980 and the end of the century. All Hispanic ethnic groups in that age range had large gains, especially non-Puerto Rican Hispanics. Various Hispanic ethnic groups exhibited different age-related growth patterns.

The U.S. Hispanic population (including insular Puerto Ricans) age 17-35 was projected to increase by an overall 36.1% in the years 1980-2000, as compared with an increase of 11.5% for the Black U.S. population of those ages and a decrease of 8% for the total U.S. population in the same age bracket.

Hispanic accession rates in FY 81 were higher for males than females and for Puerto Ricans than other Hispanics. Accession rates were highest of all for insular Puerto Ricans. Younger age groups, such as 18 through 20, had higher accession rates than older age groups. Accession rates for Hispanic males exceeded accession rates for Hispanic females by about eight to one.

Accession projections for Hispanics age 17-35 were patterned differently from accession rates. Non-Puerto Rican Hispanics were projected to have more accessions than were Puerto Ricans in the period 1980-2000. Insular Puerto Ricans had higher accession projections than continental Puerto Ricans. Projected accessions tended to peak at the younger ages, 17-20.

Hispanic accessions were projected to grow as a proportion of total Army accessions between 1980 and 1990--from 5.0% to 5.8%. No information on projected or desired total Army accessions was available beyond 1990.

ESL eligibility rates in FY 81 were found to be much higher for Hispanic males than Hispanic females. Puerto Ricans had higher ESL eligibility rates than other Hispanics. Highest ESL eligibility rates were exhibited by Puerto Rican males age 21-22.

Projections of ESL-eligible Hispanic accessions age 17-35 showed slight to moderate increases between 1980 and the end of the century. Males were projected to outnumber females greatly in terms of ESL eligibility. Furthermore, ESL eligibility projections were about ten times higher for Puerto Ricans than for other Hispanic accessions. The proportion of Hispanic accessions eligible for ESL instruction was not projected to change dramatically between 1980 and the end of the century.

Research Report 1349

# Demographic Projections to the Year 2000 of Limited English Proficient Hispanic Accessions in the U. S. Army

**Rebecca Oxford-Carpenter**
Army Research Institute

**Louis Pol**
Memphis State University

**Murray Gendell**
Georgetown University

for

Instructional Technology Systems Technical Area
Zita Simutis, Chief

**Training Research Laboratory**
**Harold F. O'Neil, Jr., Director**

U.S. ARMY RESEARCH INSTITUTE FOR THE BEHAVIORAL AND SOCIAL SCIENCES
5001 Eisenhower Avenue, Alexandria, Virginia 22333-5600

Office, Deputy Chief of Staff for Personnel
Department of the Army

April 1984

**Army Project Number**
**2Q162722A791**

**Training Research**

Approved for public release; distribution unlimited.

## FOREWORD

The Training Research Laboratory of the U.S. Army Research Institute for the Behavioral and Social Sciences (ARI) performs research and development in areas related to military training. Of special interest is information pertaining to numbers and types of soldiers who need English-as-a-second-language (ESL) instruction due to their limited proficiency in English. The majority of ESL-eligible soldiers are Hispanic, so the Army has a great concern for knowing more about the size and composition of its Hispanic ESL-eligible population. This report provides information on that population in the form of demographic projections to the year 2000 by age, sex, and ethnic group.

This investigation was funded by the Training Research Laboratory as Scientific Services Program Contract number DAAG 29-81-D-0100. The research was conducted at ARI, but the contract was handled through the Army Research Office and Battelle Laboratories, both of Research Triangle Park, North Carolina.

It is expected that the information reported here will be of use to policy makers and scientists concerned with military training, education, recruitment, selection, classification, personnel utilization, and retention.

Edgar M Johnson

EDGAR M. JOHNSON
Technical Director

ACKNOWLEDGMENTS

The authors are especially grateful to Dr. Veronica Thomas for her tireless data analysis efforts. We also thank the following persons for their helpful reviews: Dr. Joan Harman, Dr. M. A. Fischl, Dr. Janice Redish, Frances Grafton, and LTC (Ret.) Clinton Anderson. Essential technical and production support came from Joseph Duval, Bettie Teevan, Martin Gendell, and Deborah Lucas.

DEMOGRAPHIC PROJECTIONS TO THE YEAR 2000 OF LIMITED ENGLISH PROFICIENT HISPANIC ACCESSIONS IN THE U.S. ARMY

## EXECUTIVE SUMMARY


Requirement:

To improve the Army's capability for planning its training and manpower programs by projecting the number of limited English proficient Hispanic accessions eligible for English-as-a-second-language (ESL) instruction to the year 2000.

Procedure:

The Cohort Component Prevalence Rate method was used to make projections. The procedure combined three sets of data: (1) projections of the Spanish origin population of the U.S. in accession ages (17-35), (2) age-specific rates of accession into the Army by Hispanics, and (3) rates of ESL eligibility for Hispanic accessions. Projections were made for males and females in the following age intervals: 17, 18, 19-20, 21-22, 23-25, and 26-35. These projections were "crossed" with the following ethnic groups: insular Puerto Ricans, continental Puerto Ricans, and other Hispanics. Additionally, comparisons were made with total U.S. population and Black U.S. population figures.

Findings:

The U.S. Hispanic population (including insular Puerto Ricans) age 17-35 was projected to increase by an overall 36.1% in the years 1980-2000, as compared with an increase of 11.5% for the Black U.S. population of those ages and a decrease of 8% for the total U.S. population in the same age range. All Hispanic ethnic groups, especially non-Puerto Ricans, were projected to have large gains. Hispanic accession rates in FY 81 were higher for males than females and for Puerto Ricans than other Hispanics. Accession rates were highest of all for insular Puerto Ricans. Younger age groups, such as 18 through 20, had higher accession rates than older age groups. Accession rates for Hispanic males exceeded accession rates for Hispanic females by eight to one. Non-Puerto Rican Hispanics had more projected accessions than Puerto Ricans in the period 1980-2000. Insular Puerto Ricans had higher accession projections than continental Puerto Ricans. Hispanic accessions were projected to grow from 5.0% to 5.8% as a proportion of total Army accessions between 1980 and 1990. ESL eligibility rates were much higher for Hispanic males than Hispanic females. Puerto Ricans had higher ESL eligibility rates than other Hispanics. Highest ESL eligibility rates were exhibited by Puerto Rican males age 21-22. Slight to moderate increases were found in ESL eligibility of Hispanic accessions age 17-35. Males were projected to outnumber females in terms of ESL eligibility. Furthermore, ESL eligibility projections

were about ten times higher for Puerto Ricans than for other Hispanic accessions. The proportion of Hispanic accessions eligible for ESL instruction was not projected to change dramatically between 1980 and the end of the century.

Utilization of Findings:

This report has utility for scientists and administrators in military recruitment, selection, classification, training, personnel utilization, and retention, because it provides information on an important segment of the Army population: limited English proficient Hispanic accessions. Results point to the need for continued, high quality English instruction, suitable selection and classification procedures, awareness of cultural differences, and improved data collection methods.

DEMOGRAPHIC PROJECTIONS TO THE YEAR 2000 OF LIMITED ENGLISH PROFICIENT HISPANIC ACCESSIONS IN THE U.S. ARMY

CONTENTS


| | Page |
|---|---|
| THE ARMY HAS A NEED FOR DATA ON HISPANIC ACCESSIONS | 1 |
| EIGHT KEY SECTIONS COMPRISE THIS REPORT | 1 |
| THE INVESTIGATION FOCUSES ON LIMITED ENGLISH PROFICIENT HISPANICS | 1 |
| RELATED RESEARCH COVERS GENERAL DEMOGRAPHIC STUDIES AND ARMY RESEARCH | 3 |
| General Demographic Research Shows High Hispanic Growth Rates | 3 |
| Army-Related Research Shows Sizeable Number of Limited English Proficient Hispanic Accessions | 10 |
| PROJECTIONS ARE MADE BY SEX, AGE, AND ETHNICITY | 12 |
| Projection Formula Combines Several Data Sets | 13 |
| Hispanic Population Projection Methodology Uses Data from Multiple Sources | 14 |
| General Ethnic Group Comparisons Involve Data from the Census and the Puerto Rican Planning Board | 15 |
| Hispanic Accession Projection Methodology Involves Army Accession Rates and Population Projections | 15 |
| Hispanic ESL Eligibility Projection Methodology Uses Special Adjustments | 17 |
| Contrast Is Shown Between Total Spanish Origin Accessions and ESL-Eligible Spanish Origin Accessions | 18 |
| RESULTS EXHIBIT LARGE INCREASES IN MANY CATEGORIES | 19 |
| Hispanic Population Projections Show Substantial Increases | 19 |
| Comparison with Total U.S. and Black Populations Exhibits Greater Growth for Hispanics | 20 |
| Hispanic Accession Rates Are Higher for Males than Females and for Puerto Ricans than Other Hispanics | 20 |
| ACCESSION PROJECTIONS SHOW ETHNIC, SEX, AND AGE DIFFERENCES | 21 |
| Hispanic Accessions Grow as Proportion of Total Accessions | 21 |
| ESL Eligibility Rates Are Much Higher for Hispanic Males than for Hispanic Females | 21 |
| ESL Eligibility Projections Demonstrate Slight to Moderate Increases | 22 |
| Comparison of ESL-Eligible Hispanic Accessions with Total Hispanic Accessions Indicates Little Change Across Years | 22 |
| Summary of Results Displays Hispanic Growth Patterns | 22 |

Page

CAVEATS CONCERN VARIABLE ASSUMPTIONS AND REPEATED PROJECTIONS . . . . . 23

THE PROJECTIONS HAVE IMPLICATIONS FOR ARMY INSTRUCTIONAL AND MANPOWER PROGRAMS . . . . . 24

REFERENCES . . . . . 27

APPENDIX: TABLES OF RESULTS . . . . . A-1

1. Male Spanish Origin U.S. Population Projections Age 17-35 by Age and Ethnicity (in Thousands). . . . . A-3

2. Female Spanish Origin U.S. Population Projections Age 17-35 by Age and Ethnicity (in Thousands). . . . . A-5

3. Spanish Origin U.S. population, Black U.S. Population, and Total U.S. Population in Years 1980 and 2000, Age 17-35 (in Thousands) . . . . . A-7

4. Male Spanish Origin Accession Rates by Age and Ethnicity, circa 1980 . . . . . A-8

5. Female Spanish Origin Accession Rates by Age and Ethnicity, circa 1980 . . . . . A-10

6. Male Spanish Origin Accession Projections Age 17-35 by Age and Ethnicity . . . . . A-12

7. Female Spanish Origin Accession Projections Age 17-35 by Age and Ethnicity . . . . . A-14

8. Comparison of Total Army Accessions and Spanish Origin Army Accessions Age 17-35, circa 1980 and circa 1990. . . . . A-16

9. Male Spanish Origin ESL Eligibility Rates Age 17-35 by Age and Ethnicity . . . . . A-17

10. Female Spanish Origin ESL Eligibility Rates Age 17-35 by Age and Ethnicity . . . . . A-18

11. Male Spanish Origin ESL Eligibility Projections Age 17-35 by Age and Ethnicity . . . . . A-19

12. Female Spanish Origin ESL Eligibility Projections Age 17-35 by Age and Ethnicity . . . . . A-20

13. Comparison of Total Spanish Origin Accessions and ESL-Eligible Spanish Origin Accessions in 1980 and 2000, Age 17-35, by Sex . . . . . A-21

# DEMOGRAPHIC PROJECTIONS TO THE YEAR 2000 OF LIMITED ENGLISH PROFICIENT HISPANIC ACCESSION IN THE U.S. ARMY

## THE ARMY HAS A NEED FOR DATA ON HISPANIC ACCESSIONS

In early 1981 educational officers in the Army Adjutant General's Office asked the U.S. Army Research Institute for the Behavioral and Social Sciences (ARI) to provide demographic projections of Hispanic recruits who were limited in English proficiency and hence eligible for the Army's English-as-a-second language (ESL) instruction provided in the Basic Skills Education Program (BSEP). Interest in projections of Hispanic recruits, especially those with English language deficiencies, also became evident in other offices within the Department of the Army. Inclusion of the topic of Hispanic limited English proficient soldiers in the continuous, long-range planning of the Department of the Army and the Army Research Institute attests to the growing need to accommodate the needs of such soldiers.

This report presents demographic projections to the year 2000 of limited English proficient Hispanic accessions in the Army. Projections are made for males and females, various Hispanic ethnic groups, and age bands within the accession age range of 17 to 35.

## EIGHT KEY SECTIONS COMPRISE THIS REPORT

This report contains eight key sections: (1) focus and parameters of the research, (2) related research, (3) projection methodology, (4) results, (5) caveats, (6) implications, (7) references, and (8) an appendix of statistical tables showing results.

## THE INVESTIGATION FOCUSES ON LIMITED ENGLISH PROFICIENT HISPANICS

The ultimate focus of the research is a particular type of soldier: the Hispanic accession who is limited in English language proficiency. As used here, the term "accession" signifies a recruit who has not only applied to join the Army but has also been accepted and has signed a contract. In this report we use total accession figures that include both nonprior-service recruits and prior-service recruits, the latter of whom comprise about 8% of all recruits. Our figures include active Army accessions only, not National Guard and Army Reserve accessions, because the initial requests for information which we received concerned only active Army accessions. Making projections of National Guard and Army Reserve accessions would necessitate a separate investigation, as their composition and accession trends are different from those of active Army accessions. We include in our figures both "delayed entries" and "direct ships," the former being soldiers who elect to delay their entry after signing the contract to join the Army and the latter being soldiers who enter immediately.

The terms limited English proficiency and "ESL-eligible" are used synonymously in this report, because limited English proficiency is the criterion for being eligible for ESL programs in the Army. "ESL-eligible" is a

programmatic term used for classification purposes in the Army's training and education arena. The operational definition of "ESL-eligible" in the Army at the current time is a score of less than 70 on the English Comprehension Level Test (ECLT) and/or command referral of an individual soldier for ESL instruction. The ECLT is a test developed by the Defense Language Institute English Language Center to assess English proficiency. Two-thirds of the test cover a combination of listening and reading, and the balance is purely reading. Further information on the test is found in Oxford-Carpenter, Harman, and Redish (1983).

Projections of Hispanic ESL-eligible accessions are important, because 85% to 95% of Army ESL students are native Spanish speakers (Holland, Rosenbaum, Stoddart, Redish, Harman, & Oxford-Carpenter, 1984; Oxford-Carpenter, Harman, & Redish, 1983). These projections are of great interest to Army educators and trainers, particularly those involved in planning and conducting ESL programs. Individuals concerned with personnel selection and classification also need to know how many limited English proficient soldiers may be entering the Army in the next two decades.

"Hispanic" and "Spanish origin" are used interchangeably here to encompass individuals whose origin is Mexican, Puerto Rican, Cuban, Central American, South American, Spanish, or other related backgrounds. "Spanish origin" is the official term used by the Census Bureau to designate these backgrounds, but "Hispanic" is often used as a shorthand name. "Anglo" is often used to signify "White" in demographic reports such as this.

It is helpful to distinguish among the terms "population projections," "forecasts," and "estimates." Simply put, a population projection merges a set of population data, such as the age and sex composition of a population, with assumptions concerning future demographic behavior (fertility, mortality, and migration rates). This merging generates population numbers for some specified year(s) in the future. Generally, alternative projections are provided by varying the assumptions, because several demographic scenarios may be possible. At the present time, the U.S. Bureau of the Census produces four sets of projections for the U.S. population by varying these demographic assumptions.

On the other hand, it is sometimes the case that the producer of the projections, for one reason or another, assigns a higher probability to one set of assumptions than to all other assumptions. In this instance, one set of numbers is produced, and this is called a "forecast." The difference between a projection and a forecast concerns the degree of confidence the producer has in any one set of assumptions being more likely to hold than all others.

The other term frequently used in similar contexts is "estimate." Estimates are usually generated for intercensal time periods (i.e., periods between the ten-year, or decennial, censuses) and after the estimate year in question. The estimates published by the U.S. Bureau of the Census through the federal-state cooperative program usually appear two years after a given estimate year has passed. The procedures used to create population estimates are frequently different from those used to yield projections.

This investigation is concerned with population estimates for 1980 and, more importantly, population projections for 1985, 1990, 1995, and 2000. The obvious use for a population projection is to provide a set of numbers of which to base planning decisions. However, an equally important purpose may be analytic in nature. Any population projection will contain some error. As one makes projections further away from the current year, the error can be greatly magnified. However, by analyzing errors--that is, periodically ascertaining the differences between projected and actual numbers and attempting to isolate the sources of the differences--errors in the future may be reduced. Error sources, such as faulty fertility or mortality assumptions, can be identified and subsequent assumptions adjusted.

There is a significant amount of research related to the focus described here. The following section presents some of the most germane information from previous research.

## RELATED RESEARCH COVERS GENERAL DEMOGRAPHIC STUDIES AND ARMY RESEARCH

This section concerns research relevant to the current investigation. Such research falls into two areas: first, general (i.e., non-Army-specific) demographic research on Hispanics or other pertinent ethnic and/or language groups; and second, Army-related research on Hispanics and ESL-eligibles.

### General Demographic Research Shows High Hispanic Growth Rates

Many important demographic studies have been conducted on the topic of Hispanics and other ethnic groups. We will discuss the most relevant of these studies here in the order in which they were conducted or published.

1970 Census Has Undercounts. The 1970 Census (see Russell, 1983) estimated the Spanish origin population in four ways: a Spanish origin question, asked of a 5% sample of households across the U.S.; a Spanish surname identifier used in five states; a Spanish mother-tongue question asked of a 15% sample of households; and a question concerning birthplace of self and of parents asked of 20% and 15% of households, respectively. With four ways of counting Hispanics, four separate estimates of the Hispanic population were produced by the Census Bureau. The Spanish origin question produced an estimate of 9.1 million (the most often quoted figure for the 1970 Hispanic population). Other 1970 Census estimates of Hispanics were 4.7 million generated from the Spanish surname identifier; 9.6 million based on the Spanish mother-tongue question; and 5.2 million estimated from birthplace data (Russell, 1983). The 1970 Census is likely to contain a severe undercount of Hispanics, an undercount at least as great as the 7.7% underestimate for Blacks, according to the U.S. Commission on Civil Rights (Macias, 1977). A widely held assumption is that undocumented Hispanics avoid government contacts, such as the Census (Macias, 1977).

1975 Current Population Survey Taps Languages. The 1975 Current Population Survey--Survey of Language Supplement, or CPS-SLS (U.S. Bureau of the Census, 1975) asked questions about current individual language, current household language, mother tongue, ability to speak and understand English, birthplace,

year of immigration, and ethnic origin. The CPS-SLS used stratified multi-stage cluster sampling of households. The CPS-SLS was used as a pilot test for certain questions which were used in later studies such as the Survey of Income and Education (SIE). The CPS-SLS indicated that 90% of Americans had no second language, while 4.3 million reported Spanish as a second language and 4.9 million reported English as a second language. Of the 8 million persons 4 years old or over who had a language other than English as their usual language, 5 million (63%) reported difficulty in speaking or understanding English. Four million persons 4 years old or over had Spanish as their usual language; of this number 54% reported difficulty in speaking or understanding English. Compared to 96% of Americans reporting English as their usual language, 2% of Americans reported Spanish as their usual language. The number of Americans living in non-English speaking households (i.e., households where the language is other than English) was 4.8 million. The 1979 CPS also included a Survey of Language Supplement. Respondents were asked self-report and other-report questions on language proficiency.

Measure of English Language Proficiency Is Used in Several Studies. In anticipation of the SIE, a study (Stolz & Bruck, 1976) was conducted by the Center for Applied Linguistics to develop a surrogate "measure of English language proficiency," or MELP, which consists of a set of census-type or survey-type questions such as mother tongue, usual language spoken, or family income. The main purpose of a MELP is to allow estimation of limited English proficiency rates when language testing cannot be used, as in the SIE. In order for a MELP to be useful, it must first be calibrated in a study in which both the MELP and a language test are administered, and then the MELP alone can be used as a surrogate for the test in a larger census or survey to impute levels of English proficiency. The 1976 MELP study included a sample of children and adults from four states (Florida, Texas, Arizona, and California). This study calibrated the MELP (a set of items including length of time in U.S., ratings of proficiency in speaking and understanding English, usual household language, language spoken with siblings, language spoken with best friends, educational attainment, income, year of birth, and other topics) with a language test covering reception, production, and communication and with other language ratings. A discriminant function analysis showed 82% correct classification between the test and the MELP.

The Survey of Income and Education, or SIE (Waggoner, 1978), was required by the Education Amendments of 1974 to furnish current data on the number of school-aged children in poverty for purposes of formula allocation of Elementary and Secondary Education Act (ESEA) Title I (compensatory education) support. The Census Bureau conducted the SIE with input from the National Center for Education Statistics (NCES). The SIE used the MELP technique along with stratified, multi-stage cluster sampling, with primary sampling units (PSUs) stratified by the proportion of persons 5-17 years of age living in poverty families in 1970. The SIE included 158,500 households and 440,000 individuals in a sample of 50 independent states and the District of Columbia. The SIE found that approximately 28 million persons in the U.S., including about 5 million school-age children, had mother tongues other than English or lived in households in which languages other than English were spoken (Waggoner, 1978). Approximately two-thirds of all these persons and more than four-fifths of the school-age children were native born. One person in eight in the U.S. was classified as non-English language background (NELB), and one in ten school-age children (6-18) was NELB. More than one-third of all NELBs and 60% of all

NELB school-age children were Hispanic, with Spanish-language background persons numbering 10.6 million. Other principal NELB groups were Italian and German (3 million each); French (2 million); and Asian, including Chinese, Filipino, Japanese, Korean, and Vietnamese (total of 2 million). These figures may be conservative, particularly for the Hispanic population, which includes a sizeable number of undocumented persons.

The Children's English and Services Study or CESS (Dubois, 1980; O'Malley, 1981, 1982) was launched by the National Institute of Education (NIE) and NCES to obtain counts of LEP children for the nation and for four smaller areas: California, Texas, New York, and the rest of the nation. The CESS dealt only with the specific language categories of Spanish and "other." The CESS used stratified, multi-stage sampling with 35,000 households screened and approximately 2,000 identified as NELB, and thus eligible for inclusion. Ultimately, 1,909 children (ages 5-14) and their families were interviewed. A new 13-item MELP and a specially constructed test of English proficiency (the Language Measurement and Assessment Inventories, or LM&AI) were administered for each sampled child. The LM&AI is an indirect, discrete-point instrument having 11 different forms, one each for ages 5-14. The test is objective-based, built by expert consensus, and covers all four language skills: reading, writing, speaking, and understanding. The results of this test were calibrated with selected MELP items common to both the CESS and the SIE to obtain estimates of LEP persons. Discriminant function analysis in the CESS showed accuracies of classification ranging from 54% to 67% between the MELP and the test. The age group 5-14 was found to contain 2.4 million LEP children. Using extrapolation, the study determined that the U.S. school-age population (4-18 years) contained an estimated 3.6 million LEP children, which equalled 63% of all NELB children in that age range. More Hispanic NELB children of ages 5-14 than other NELB children of the same age were classified as LEP. This means that the LEP rate was higher for Hispanic NELB children of ages 5-14 (73%) than for other NELB children of the same age. CESS results indicated that LEP rates did not vary appreciably by age. The study showed that 1.5 million or 62% of all LEP children lived in three states: California, Texas, and New York. The proportion of LEP children in those states ranged from 70% to 77%, while the proportion in the rest of the country was 53%.

The LEP projection study conducted by InterAmerica Research Associates (Oxford, Pol, Lopez, Stupp, Gendell, & Peng, 1981; Peng, Oxford, Stupp, & Pol, 1982; Oxford-Carpenter, Pol, Lopez, Stupp, Gendell, & Peng, 1984) made projections by state, age, and language group to the year 2000 for NELB and LEP persons. The SIE, the CESS, the CPS, and the Census Bureau's illustrative projections of the 50 states and the District of Columbia were used as data elements in the study. A new, special MELP composite developed for this study consisted of two items: reported ability to speak and understand English and family income. A probabilistic procedure was used to link the CESS and the SIE with the new MELP composite. The researchers used a Cohort Component Prevalence Rate Method to project the number of LEP persons ages 5 through 14 for particular years. NELB population figures for all ages were projected before LEP rates were applied.

Results indicated that the number of NELBs in the total U.S. was projected to increase from approximately 28.0 million in 1976 (the base year) to 30.0 million in 1980, 34.7 million in 1990, and 39.5 million in 2000.

Of all NELBs of any year, the largest single language group was Hispanic, comprising 10.6 million NELBs in 1976, or 38% of the total NELB population in that year. Due to their higher growth rate, Hispanic NELBs were projected to increase to 18.2 million by the year 2000 (46% of the total NELB population). Younger NELB age categories showed projected increases that were larger than those for older NELB age categories. The Hispanic NELB group was much younger than the rest of the NELBs, and this configuration became more pronounced through the projection years. Heavy concentrations of NELBs were found in Texas, California, and New York, with projected proportional increases in the first two states and a projected proportional decrease in the last. Between 1976 and 2000 there was a projected increase of 880,000 LEP children ages 5 to 14; of this number, 840,000 or 95.5% were accounted for by the Hispanic LEP population. Hispanic LEP children were projected to move from 1.8 million or 71% of all LEP children in 1976 to 2.6 million or 77% in 2000. LEP rates (i.e., the percentage of all non-English language background persons in a particular group who have limited English proficiency) varied considerably by language, with the highest LEP rates (75%) being found among Hispanic and Vietnamese populations and the typical range being 41% to 53%. California and Texas showed overall projected gains in numbers of LEP children between 1976 and 2000, while New York's LEP number remained the same for 1976 and 2000. In various NELB and LEP groups, slight and temporary declines were projected for certain early projection years, but these declines were more than compensated for by later increases.

Synthetic Estimate Procedure Is Useful. Peng, Oxford, Stupp, and Pol (1982) reviewed three analytic procedures by which estimates can be made of the number of LEP children in the U.S.: discriminant function analysis as used in the CESS, probabilistic techniques as used in the InterAmerica projection study, and a synthetic estimate procedure. The researchers maintained that the synthetic estimate procedure can be used to generate information about the number of LEP persons with fewer prerequisites than the other two procedures entail. Specifically, the synthetic estimate procedure does not require subjective language ability rating items, unless grouping of subpopulations calls for those items. However, the synthetic estimate procedure still requires reliable, valid, and objective measurement of English language skills from a representative sample of NELB persons. Periodic recalculation of LEP rates was also recommended.

1980 Census Expands Hispanic Queries. In the 1980 Census (see Russell, 1983), in contrast to the 1970 Census, the question, "Is this person of Spanish/Hispanic origin or descent?" was asked of every person in the country. The Census Bureau admits that there may have been an overcount of Hispanics in certain areas, such as small towns, where Hispanics had rarely been found in the past. However, the overcount in those areas is likely to be too small to have any overall effect, according to experts on the Census as discussed in a recent New York Times article. Using the Spanish/Hispanic origin question, the 1980 Census found that 14.6 million people in the U.S. are Hispanic, a 61% increase over the 9.1 million figure from the 1970 Census. Census Bureau specialists feel that the true growth rate is probably lower, but "for the nation as a whole they are unable to separate the apparent growth rate of Hispanics due to improved reporting on the census from the true growth due to births and to legal and illegal immigration" (Russell, 1983, p. 16). However, for certain states with many Hispanics, comparisons between 1970 and 1980 are possible because large numbers reduced sampling errors. Russell

indicated that the Hispanic population of Florida grew 112% in the ten-year period (even before the influx of about 120,000 Cubans just after completion of the 1980 Census), while California's Hispanic population increased by 92%, Texas' by 62%, and New York's by 23%. The 1980 Census counted 8.7 million Mexicans, 2.0 million Puerto Ricans, 803,000 Cubans, and 3.1 million "other Spanish." Mexicans were the dominant Hispanic group in California and Texas. Puerto Ricans were the largest Hispanic group in New York, and Cubans were the biggest Hispanic group in Florida. According to the 1980 Census, the median age of Hispanics throughout the U.S. was 23 years, compared to 30 years for all Americans (Russell, 1983). In the 1980 Census, median family income for all Hispanics was $14,700, compared to $19,900 for all U.S. families and $12,600 for Black families; but wide ranges were found for various Hispanic groups, with Cubans being most affluent.

U.S. Hispanics Are "Wealthy." Although the overall income of U.S. Hispanics is lower than the national average, Hispanics in the U.S. are the wealthiest Hispanics in the world (Russell, 1983). The potential for economic opportunity draws both legal and illegal Hispanic immigrants to the U.S. Incomes of Hispanics in this country are lower than the national average largely due to lower Hispanic education levels, although Russell indicated that younger Hispanics are catching up with their non-Hispanic peers in the area of education. Among 25- to 34-year-old Hispanics, 57% had finished high school and 24% had attended at least one year of college, according to the 1981 Current Population Survey (Russell, 1983).

English Use Varies Among Hispanics. Use of English varies by Hispanic ethnic group. Russell (1983) pointed out that the 1980 survey of Hispanics in NCES' High School and Beyond Study found that among high school seniors, 12% of Mexican-Americans, 19% of Puerto Ricans, and 26% of Cubans spoke only Spanish at home. In contrast, 30% of Mexican-Americans, 27% of Puerto Ricans, and 21% of Cubans spoke only English at home. The rest used both languages at home. Level of education and place of birth (inside or outside U.S.) are related to English proficiency among Hispanics.

Illegal Aliens Are Mostly Hispanic. Census Bureau demographers Warren and Passel (1983) noted that the official 1980 Census count of illegal aliens in the U.S. was only about 2 million, which is about one-third of the more scientifically accurate 6 million estimate produced by Warren and Passel. (Note that this would mean that the actual total number of Hispanic origin individuals in the U.S. in 1980 might be closer to 18.6 million than to the reported 14.6 million.) Estimates of the numbers of illegal aliens in the U.S. have varied widely, from 2 million to 25 million. No single country besides Mexico appears to contribute a substantial segment of the illegal alien population, according to Warren and Passel. Macias (1977) estimated that at least 90% of the undocumented population is Hispanic.

U.S. Hispanics Have Higher Growth Rate Than Total U.S. Population. A higher growth rate for U.S. Hispanics than for the overall U.S. population was cited by Macias (1977), Oxford, Pol, Lopez, Stupp, Gendell, and Peng (1981), and Russell (1983). Some contributing factors include the larger Hispanic family, the younger age of Hispanics, the higher birth rate of U.S. Hispanics (except for Cubans) in comparison with the general population, and continuous legal and illegal immigration to the U.S. from Spanish-speaking countries.

Because of this high Hispanic growth rate, it was asserted that by the year 2000 Hispanics will be the largest racial/ethnic group, after Anglos, in the U.S. (Macias, 1977). The proportion of the total U.S. population that is Black has been projected to increase from 11.9% in 1981 to 13.4% in 2000 (U.S. Bureau of the Census, 1982). Not all data support the assertion that Hispanics will outstrip Blacks in number by the year 2000. The key question relates to the uncertain number of illegal Hispanic immigrants.

A report published by the Center for Continuing Study of the California Economy (cited by Russell, 1983) projected that the U.S. Hispanic population will number 18.8 million by 1990 and 23.1 million by 2000 using one set of assumptions, or 20.4 million by 1990 and 26.9 million by 2000 using a different set of assumptions. The higher figures assume higher fertility and more legal and illegal immigration than the lower figures. In both projection series, Mexicans were projected to increase as a share of the total Hispanic population, from 61% in 1990 to as much as 66% in 2000 under the higher-growth alternative. As a proportion of the total population, Hispanics were projected to increase from their current 6.4% to between 8.6% (first alternative) and 9.9% (second alternative) by the year 2000. By age the youngest group, under 15, was projected to grow most slowly because Hispanic fertility is expected to decline in accordance with declines already seen in the rest of the U.S. population.

Macias (1977) presented Hispanic projections for the year 2000 that ranged from a conservative 17.5 million to a liberal 55.3 million, depending on the rate of natural increase, source of base year data, and inclusion or exclusion of illegal alien data. Based on these figures, Hispanics in 2000 were projected to represent from 6.7% to 21% of the total U.S. population. At the low end, Hispanics in 2000 would be half the total of the Black population and at the high end about twice the Black total.

The 1980 Census counted 14.6 million persons of Spanish origin in the U.S., representing 6.4% of the total 1980 U.S. population of 226.5 million (Davis, Haub, & Willette, 1984). Among minority groups in the U.S., Hispanics are second only to Blacks in terms of numbers. Hispanics are also the fastest growing minority group. David, Haub, and Willette (p. 3) summarized the situation as follows:

> Fueled by the relatively high fertility of most Hispanic groups and increasing immigration, both legal and illegal, their numbers grew by about 265 percent from 1950 to 1980, compared to just under 50 percent for the total U.S. population. If immigration to the U.S. were to continue at the recent estimated total of about one million a year (legal plus illegal, Hispanics plus Asians and all others), Hispanics could number some 47 million and comprise 15 percent of the population by the year 2020, displacing Blacks as the country's largest minority.

Two important projections of Hispanics, both used in the current investigation, came from the Population Reference Bureau (Bouvier, Davis, & Haupt, 1983) and the Puerto Rican Planning Board (1984). The Population Reference Bureau projections included continental U.S. Puerto Ricans and other Hispanics in the U.S. but did not include insular Puerto Ricans. The Puerto Rican Planning Board projections concerned insular Puerto Ricans only. Taken

together, these two sources provided all the information we needed concerning U.S. population projections of Hispanics. The Population Reference Bureau projections of accession-age individuals showed increases in some age groups from 1980 to the year 2000 and moderate declines in other age groups in the same time period. Huge gains were found in the 26-35 age band. The Puerto Rican Planning Board projections of insular Puerto Ricans of accession age displayed either no change or else clear increases for various age categories, with no decreases such as those found in the non-insular data provided by the Population Reference Bureau. Use of the Puerto Rican Planning Board data represents a large step forward for the Army, which has formerly had little or no information on the population trends of insular Puerto Ricans--the group that comprises the majority of the Army's limited English proficient population.

Hispanics Are Younger than Other Americans. As cited by Russell (1983), median age of Hispanics was projected to climb to between 27 and 29 years by the turn of the century--still far below the projected median age of 36 for all Americans. The total U.S. population is growing older. The most rapidly growing age group in the U.S. population is 35- to 44-year-olds (Miller, 1983). The U.S. population of 18- and 19-year-olds, the prime group entering the labor force, college, and the Armed Forces, has been projected to decline from 8.5 million in 1981 to 6.5 million in 1995 before rising slowly to 7.5 million in 2000, according to the U.S. Bureau of the Census (1982). These changes represent a decline of 24% between 1981 and 1995 and a net decline of 12% between 1981 and 2000. Hispanic age structures are very different from and younger than age structures of the total U.S. population. Accession-age Hispanics are likely to increase significantly, as seen in the results section of the current report. Within the total U.S. population there is projected to be an increase in the percentage of students expected to complete high school, but both the relative number of 18- to 24-year-olds as a percentage of the total population and the absolute number of high school graduates each year are projected to decline over the next two decades (Taylor et al., n.d.). These factors will shrink the eligible manpower pool for military service.

Summary of General Demographic Research Focuses on Hispanic Growth. Many investigations have been conducted concerning Hispanic population growth. The overall results show that Hispanics are growing faster than other ethnic and language groups in our country. It is not known, however, whether Hispanics will outstrip Blacks in number as the largest U.S. minority group by the end of the century, as some have asserted. The unknown number of mostly Hispanic illegal immigrants would affect the balance.

The Hispanic population is younger than the total U.S. population and is growing faster than the total U.S. population. The total U.S. population is actually shrinking in accession age ranges. To be specific, the most rapidly growing age group in the total U.S. population is 35- to 44-year-olds. The U.S. population of 18- to 19-year-olds, the prime group for Army accession, has been projected to decline from 8.5 million in 1981 to 6.5 million in 1995 (a 24% drop) and then rise somewhat to 7.5 in the year 2000 (a 12% decrease from the 1981 level). Hispanics, in contrast, are projected to increase considerably as part of the total U.S. population in the accession age group by the year 2000. Therefore, Hispanics could provide a source of available and talented manpower for the Army as its overall available manpower pool shrinks.

## Army-Related Research Shows Sizeable Number of Limited English Proficient Hispanic Accessions

The Army's great concern for projections of Spanish origin ESL eligibles is related to the fact that almost all (85-95%) of the ESL eligibles are native Spanish speakers (Holland, Rosenbaum, Stoddart, Redish, Harman, & Oxford-Carpenter, 1984; Oxford-Carpenter, Harman, & Redish, 1983). Most of the Spanish-speaking, ESL-eligible soldiers are from Puerto Rico. Most non-Spanish-speaking ESL eligibles are from Korea and the Philippines. Puerto Rican ESL eligibles are almost all high school graduates who are literate in their native language. Some have college experience and even college degrees. Most have studied English in a grammar-translation mode in Puerto Rico. The typical ESL soldier has some facility in reading and writing English but weak skills in speaking English and understanding spoken English. Despite their previous English language training, Army ESL students' scores on the ESL screening test, the ECLT, are widely distributed over the ESL-eligible range of 0 to 69.

ESL-Eligible Soldiers Are Undercounted. During fiscal years 1979 through 1981 (FY 79-81), at least 4,483 limited English proficient soldiers were identified as eligible for ESL instruction, with eligibility based on below-70 ECLT scores and/or referral by commanders (Krug & Wise, 1982; Holland, Rosenbaum, Stoddart, Redish, Harman, & Oxford-Carpenter, 1984; Oxford-Carpenter, Harman, & Redish, 1983). ESL instruction is optional for members of the National Guard and the Enlisted Reserves but is officially required for eligible Regular Army enlistees. Despite the officially mandatory nature of ESL for Regular Army soldiers who lack English skills, only about 62.5% of the eligibles actually enrolled in ESL in FY 79-81. The figure of 4,483 is an underestimate, because the data base from which it comes (provided by the U.S. Army Training and Doctrine Command, or TRADOC) is known to have a considerable amount of missing data. Extrapolating from data gathered in a special survey of Army ESL classes in FY 82, it is estimated that the ESL enrollment for that fiscal year alone was 1,500 to 2,000 soldiers--most of whom were, of course, of Spanish origin.

Hispanic and Black Accessions Have More Education Than White Accessions. The Department of Defense study, Profile of American Youth (Office of Assistant Secretary of Defense for Manpower, Reserve Affairs, and Logistics, 1982), found that larger percentages of Hispanic and Black Army accessions had high school diplomas than did Anglo accessions (87% of Hispanics, 92% of Blacks, and 83% of Anglos). In the same study Hispanics had higher Armed Forces Qualifying Test (AFQT) averages than Blacks but lower ones than Anglos, and the same pattern occurred for reading grade levels. Profile of American Youth figures for Hispanics of accession ages are about 80% the size of Census-based figures, according to Frances Grafton of ARI (personal communication, 2 September 1983).

Hispanic Projections Are Difficult. Based on a Hispanic Market Profile produced by Strategy Research Corporation, the Office of Equal Opportunity (EEO) Programs of the Department of the Army (1981) developed some preliminary projections of Hispanic accessions to 1990. The market profile figures led the Department of the Army to assume that the Army's Hispanic accessions increased from 24,609 to 30,582 (24.3% increase) between 1976 and 1980 and that these accessions would grow from 30,582 to 76,284 by 1990 (40.1% increase). The 1990 Hispanic figure represents 9.9% of the 1990 total force, according to the Army's information paper on the topic. However, the time intervals used in the

market profile and the Army projections were not completely parallel, and the rationale for the assumptions underlying the projections was not offered. These projections are about four to nine times larger than those produced in the current investigation.

Gendell, Pol, and Oxford-Carpenter (1982), the current authors, attempted to make demographic projections of limited English proficient insular Puerto Rican accessions in the Army to the year 2000 using ECLT scores as a basis for determining LEP rates. However, a major problem arose because the ECLT is administered to relatively few accessions, and inconsistent criteria are used for determining who takes the ECLT. Some soldiers who need ESL instruction may be missed in the process. Due to this problem and others, it was impossible to make demographic projections using an actual language test as a basis for Army LEP rates. Gendell, Pol, and Oxford-Carpenter (1982) mentioned the option of administering the ECLT to all recruits in order to assess English competence and to provide appropriate data for planning.

In the absence of administration of the ECLT to all recruits, in 1983 the current authors turned to other methodological alternatives, such as use of language proficiency ratings available in the 1979 Current Population Survey. These ratings proved too subjective, as Stolz and Bruck (1976) might have foretold, and resulted in severe undercounts when linked with Army accession data (Pol, Oxford-Carpenter, & Gendell, in preparation). The subjective procedures, while logically appealing, were abandoned in favor of the simple approach of estimating ESL eligibility rates by using recent ESL enrollment and employing an inflation factor to correct for undercounts.

Econometric Forecasts May Have Implications. Although their research does not dirctly mention Hispanics, Dale and Gilroy (1983) produced econometric forecasts of Army enlistment that may have implications for Hispanics. Dale and Gilroy found that the rise in unemployment rate has led to a substantial increase in Army enlistments of male nonprior-service high school graduates. They projected that a drop in the national unemployment rate of just 1% (from 9% to 8%) could cause Army enlistments of male nonprior-service high school graduates to fall by 8.8%. A military wage freeze could also cause enlistment rates to fall substantially. Educational benefit levels also affect enlistment levels, as do Army Recruiting Command efforts to attract high school graduate enlistees. These factors may influence Hispanic recruitment. We may speculate that many Hispanics, perhaps in larger proportions than Anglos, may be drawn to the Army particularly in times of high unemployment. Hispanics may be more willing than some other groups to accept military salaries. Because Hispanics are closing the education gap between themselves and non-Hispanics, many may seek Army educational benefits in larger proportions than non-Hispanics. Change in unemployment rate, education benefits, and salary might therefore differentially affect Hispanics and non-Hispanics in terms of enlistment rates. In a similar vein, the report mentioned earlier, Profile of American Youth (Office of Assistant Secretary of Defense for Manpower, Reserve Affairs, and Logistics, 1982, pp. 16-19), noted the strong effects of a variety of factors (accession policy, military pay, economic conditions, and All-Volunteer Force) on AFQT scores of accessions.

Minorities and Women Are Increasing in the Army. Minorities and women are increasing their numbers in the Army, according to Taylor et al. (n.d., pp. 19-20). These authors noted various implications such trends have for personnel allocation and use in the future.

Lord and Barnes (1983) reported that the number of Blacks in military service is higher than the numbers of other minority group members in military service. In 1982, 33% of the enlisted force and 7.8% of the officer corps were listed as Black; 23% of all recruits in 1982 were Black, and other minorities (including Hispanics) represented only about 5% of recruits. The higher percentage of Blacks in the overall Army (recruits and reenlistees) is explainable, according to Lord and Barnes, because Blacks tend to stay in the service longer than Whites due to economic conditions. These researchers predicted that, due to higher birth rates among Hispanics than among other minority groups, Hispanics would outnumber Blacks by the end of the century, resulting in higher levels of Hispanic than Black accessions by the year 2000. As mentioned earlier in this review of research, the data may or may not justify the conclusion reached by Lord and Barnes (1983) about Hispanic dominance among minority group Army accessions by the year 2000, particularly because illegal immigrants are technically ineligible for Army service.

Summary of Army Demographic Research Emphasizes Puerto Ricans. Research on Hispanics and ESL eligibles in the Army indicates that there is a sizeable number of limited English proficient soldiers in the Army and that most of them are well-educated Puerto Ricans. Larger percentages of Hispanic and Black Army accessions than Anglo Army accessions have graduated from high school. Accession is influenced by national economic trends, which might differentially affect Hispanics and other groups. Although Blacks are the largest minority group in the Army, the high Hispanic growth rate is likely to alter the numbers of Hispanics and Blacks in the total military manpower pool.

We have discussed some important research related to our investigation. Using this discussion as a basis, we now offer information on the methodology of the current projection research.

## PROJECTIONS ARE MADE BY SEX, AGE, AND ETHNICITY

Projections were made by five-year intervals beyond 1980 (1985, 1990, 1995, and 2000) for males and females in the following age groups: 17, 18, 19-20, 21-22, 23-25, and 26-35. Age groups used here were chosen because of expected Army accession rates and densities at various ages. For example, ages 17 and 18 were projected separately because of the differences in accession rates for those ages, with age 18 having a much higher rate. Ages 17 and 35 are the limits for Army accession under normal circumstances, so those ages mark the boundaries of the projection age groups.

Additionally, projections were calculated for these age groups and each sex within various ethnic groups. Spanish origin U.S. population projections were made for the following groups: insular Puerto Ricans (i.e., those persons living on the island of Puerto Rico), continental Puerto Ricans (i.e., Puerto

Ricans living in the continental U.S.), total Puerto Ricans (insular and continental combined), all Hispanics excluding insular Puerto Ricans, and all Hispanics including insular Puerto Ricans. Puerto Ricans were singled out because they are the largest group of limited English proficient persons in the Army at this time, and it is helpful to see how Puerto Ricans compare with other Hispanics in the U.S. population as a whole. For purposes of comparison, projections of Blacks and of the total U.S. population in the overall age range of 17 to 35 were included for the year 2000 only.

Spanish origin accession rates and accession projections were made for the same ethnic groups, ages, and sexes as used for Spanish origin U.S. population projections. However, because Army education data do not distinguish between insular and continental Puerto Ricans, the rates of Army ESL eligibility (limited English proficiency) were given for total Puerto Ricans (insular and continental combined) and for other, non-Puerto Rican Hispanics. Projections of ESL eligibility were made for total Puerto Ricans, other Hispanics, and total Hispanics.

## Projection Formula Combines Several Data Sets

The Cohort Component Prevalence Rate method was used for making projections. See Oxford et al. (1981) for greater detail on the nature of that method. The projection procedure combined three major data sets (along with other data sets for comparison and adjustment purposes). The three data sets were:

(1) projections of the Spanish origin population in the U.S. in Army eligible ages, 17-35,

(2) rates of accession into the Army by Spanish origin persons, and

(3) rates of ESL eligibility (limited English proficiency) for Spanish origin accessions.

To obtain accession projections, the population projections were multiplied by accession rates. Calculation of ESL eligibility projections involved multiplying accession projections by ESL eligibility rates. In algebraic form, ESL eligibility projections were made as follows:

$$\underset{(a)}{\text{ESL eligibility projection}_{i,j,k}} = \underset{(b)}{\text{U.S. population projection}_{i,j,k}} \times \underset{(c)}{\text{Army accession rate}_{i,j,k}} \times \underset{(d)}{\text{ESL eligibility rate}_{i,j,k}}$$

where i = sex,
j = age group,
k = ethnic group.

For ESL eligibility projections (a) = (b) x (c) x (d). Accession projections were found by multiplying (b) times (c).

We will now describe the methodology as applied to specific projections of the U.S. Hispanic population, the Army Hispanic accession population, and the Army Hispanic ESL-eligible population.

## Hispanic Population Projection Methodology Uses Data from Multiple Sources

Tables 1 and 2 of this report (see appendix) concern population projections of U.S. Hispanics by several categories: insular Puerto Ricans, continental Puerto Ricans, other Hispanics, and totals with and without the insulars.

Insular Puerto Rican population projections by age and sex were provided by the Puerto Rican Planning Board (1984) in preliminary form. We disaggregated those projections into single years and reaggregated them into the necessary age groups for the current investigation.

Continental Puerto Rican and other Hispanic U.S. population projections by age and sex were obtained from the Population Reference Bureau (Bouvier, Davis, & Haupt, 1983). Again, appropriate age disaggregations and reaggregations were necessary.

From the insular Puerto Rican, continental Puerto Rican, and other Hispanic projections, we calculated population projections for all Puerto Ricans, all Hispanics excluding insular Puerto Ricans, and all Hispanics including insular Puerto Ricans.

Three types of assumptions (fertility, mortality, and migration) need to be considered for U.S. population projections for Hispanic groups. Since the youngest age of interest to the Army is 17, and the base date for the projections is 1980, the only births that can influence the projections to the year 2000 are those that occur in the brief period 1980-1983. It makes little difference, therefore, what is assumed about fertility. As for mortality, the single assumption of a gradual but decelerating decrease in the death rates from their already-low initial levels seems reasonable. Moreover, since the death rates in the ages of interest to this investigation (17-35) are very low, even unreasonable assumptions about mortality would have only negligible effects on the numbers projected. Migration, however, is a crucial factor because of the considerable legal and illegal immigration from Latin America (see Warren & Passel, 1983) and because of the great influence that political decisions have on immigration trends. Annual data from the Immigration and Naturalization Service for the late 1970s provided a basis for constructing a single assumption about the annual level of legal immigration for Hispanics, specifically about 220,000 legal immigrants per year with an allowance of an additional 24,000 Cubans per year in the 1980-1985 period, reflecting the Mariel exodus. Illegal immigration was not included as an adjustment factor in the current projection formula, because illegal immigrants are not eligible for Army service.

Age disaggregations were mentioned earlier. The available Spanish origin five-year population projections were disaggregated into single years and then reaggregated to form the age groups of interest here. The fluctuation over time in single-year cohort size in the total Spanish origin population parallels the fluctuation during the last 30 to 35 years in the number of births

in the U.S. This implies that to disaggregate the available 1980-2000 five-year age groups into single years of age, it is better to use the age distribution reported in the 1980 Census than a mathematical method (i.e., some type of interpolation). This observation may also imply that the effect of net migration on the Spanish origin population has not been great enough to alter the age patterns produced by the fluctuating number of births.

## General Ethnic Group Comparisons Involve Data from the Census and the Puerto Rican Planning Board

Table 3 (see appendix) shows comparisons among the Spanish origin U.S. population, the Black U.S. population, and the total U.S. population in years 1980 and 2000 for the ages 17-35. Indicated are totals by year, percentage change in each group from 1980 to 2000, percentage of the total U.S. population by year, and change in percentage of total U.S. population from 1980 to 2000.

Information on the Spanish origin population came from two sources: the Population Reference Bureau projections of all U.S. Hispanics other than insular Puerto Ricans (Bouvier, Davis, & Haupt, 1983) and the Puerto Rican Planning Board preliminary projections of insular Puerto Ricans (1984). Data from these two sources were combined into total Spanish origin figures.

The Black U.S. population figures and total U.S. population figures were calculated from data in Miller (1983) and the U.S. Bureau of the Census (1982).

Each of these comparisons required disaggregation by single year of age and reaggregation into the appropriate age groups for the current investigation.

## Hispanic Accession Projection Methodology Involves Army Accession Rates and Population Projections

Tables 4 and 5 (see appendix) show male and female Spanish origin accession rates by age and ethnicity, circa 1980, for ages 17-35. Accession projections for the same groups are given in Tables 6 and 7.

Accession data provided by the U.S. Army by sex, age, and ethnic group circa 1980 (actually FY 81, which started October 1980 and ended September 1981) were the numerators for the accession rates, while the appropriate 1980 population figures by sex, age, and ethnic group served as the denominators. Due to resource constraints we did not make projections of total Army accessions, only Spanish origin Army accessions. However, we needed total Army accession information in order to calculate the proportion of total accessions who are Hispanic. After an extensive search and interviews with Army accession officials, we were unable to find any actual, total-Army accession projections, although the Army has "objectives" for future accessions up to 1989 (see Elton, 1983). Therefore, we used the FY 89 objective as a rough surrogate of a 1990 projection for comparison purposes (see Table 8). As noted earlier, the Spanish origin population projections were multiplied by the accession rates to obtain Spanish origin accession projections.

FY 81 was selected for use because in previous years there was a problem with inaccurate norming of the screening test for applicants, the Armed Services Vocational Aptitude Battery (ASVAB). An error in calibration of the ASVAB in use from January 1976 through September 1980 resulted in inaccurate category designations for some recruits taking the test (Maier & Grafton, 1981; Office of Assistant Secretary of Defense for Manpower, Reserve Affairs, and Logistics, 1982). Specifically, the January 1976 version of the Armed Forces Qualifying Test (AFQT), which is composed of four key subtests of the ASVAB, had been miscalibrated to earlier forms of the test. This error inflated the AFQT scores of low-scoring recruits. The problem was corrected with the introduction of the new test in October 1980. When the inflated scores were recomputed, the corrected norms revealed a significant decrease in Category III (average-scoring) recruits and a very large increase in Category IV (below-average) recruits recorded as having entered the services during the period 1976 through mid-1980. Even with the existence of retroactively corrected norms for earlier years, many problems remain for those years in terms of estimating the number of Hispanic accessions who would have been admitted under the new norms, had those norms been in place at the time. Also, use of the corrected norms would entail a separate investigation. Therefore, it was decided that FY 81 was the most appropriate and accurate source of Hispanic accession data for the projection base year, 1980. Even without the norming problem, FY 81 (October 1980 through September 1981) would have been as practical a source of base year accession data as FY 80 (October 1979 through September 1980). Had the norming problem not existed, however, it would have been possible to tabulate monthly data to obtain annual accession figures for the calendar year 1980, which would have been somewhat more precise.

Due to the inadequate historical trend data caused by changes in norming of Army selection instruments, there is no good basis for projecting variable accession rates for five-year intervals from 1980 to 2000. Therefore, our projections assume "constant" accession rates. "Constancy" here means that the rates observed at each age are peculiar to the age rather than to the cohort. That is, the rates for those, say, 17 to 18 years old would be the same at every projection date. This is the assumption for the projections appearing in this report. Constant cohort rates, on the other hand, would mean that the rates for those 17-18 in 1980 would be the same as those for 22-23 in 1985, 27-28 in 1990, 32-33 in 1995, and 37-38 in 2000. Since accession is a one-time event, and the probability of such an event occurring appears to be negatively related to age, age-specific rather than cohort-specific rates are appropriate for measuring accession.

Note that the multiplication of accession rates (from Tables 4 and 5) and Spanish origin population projections (from Tables 1 and 2) could only be done for three groups: insular Puerto Ricans, continental Puerto Ricans, and other Hispanics. The number of projected accessions for year 1985 and thereafter in the other three categories (total Puerto Ricans, total Hispanics excluding insular Puerto Ricans, and total Hispanics including insular Puerto Ricans) have to be obtained by addition and subtraction rather than by use of the projection formula. This is because the circa 1980 rates are kept constant, and the weights for the three "total" categories are weighted averages. The weights are the relative numbers in the other three (non-total) categories. Because these categories often change in number between 1980 and 2000 at considerably different rates, the weights change. As a result, the accession rates of the "total"

categories in 1985-2000 are increasingly different from those circa 1980, even on the assumption that the circa 1980 accession rates for Puerto Ricans and other Hispanics remain constant. Accession rate results (see later) demonstrate this seeming paradox.

In June 1983 we queried Department of the Army accession administrators (L. Ruberton, personal communication, 15 June 1983) concerning any current or future accession policies regarding Hispanics. We found no specific policy existing or planned which either limits or promotes Hispanic accession and no negative or positive quotas regarding Hispanics. Therefore, no ceiling or floor adjustment factor nor statistical change factor was included for Hispanic accessions.

## Hispanic ESL Eligibility Projection Methodology Uses Special Adjustments

Tables 9 and 10 (see appendix) present male and female ESL eligibility rates for ages 17-35 by age and ethnicity and show how the calculations of rates were accomplished. Tables 11 and 12 (see appendix) offer ESL eligibility projections for the same groups.

To calculate ESL eligibility (limited English proficiency) rates, we relied on Army data concerning the number of ESL-eligible soldiers by sex, age, and ethnic group for the numerator and on Army accession data by the same categories for the denominator. Because of missing data, several adjustments were used to approximate the actual ESL figures. Because of the complex methodology used to compensate for missing data, the ESL eligibility projections must be viewed as somewhat less reliable than the population projections and the accession projections. Nevertheless, the ESL eligibility projections were systematically generated and are indicative of potentially important trends.

We began our calculations using ESL data from the Army TRADOC data set on eligibility for the Basic Skills Education Program I ESL program for the 3 years FY 79-81. The data set showed that (1) approximately 4,500 limited English proficient soldiers were identified as eligible for ESL instruction, although (2) only 62.5% or 2,800 actually enrolled in ESL classes during those three years. In FY 82 a special survey was conducted by the American Institutes for Research under contract to the Army Research Institute during a three-month period. Approximately 550 soldiers were involved in the survey. Extrapolating from survey results, it was estimated that FY 82 enrollment in ESL classes was between 1,500 and 2,000 soldiers. This would imply that ESL enrollment for the three-year period might be between 4,500 and 6,000 soldiers--not 2,800 as shown in the TRADOC data base. Furthermore, the number of ESL eligibles for those three years was approximately 1.6 greater than the number of actual enrollees (i.e., 1 divided by 62.5%). Obviously there was a need to adjust for the missing data and for the fact that not all eligible individuals actually enrolled.

Another equally important reason existed to make adjustments in the available data. Because the TRADOC data set did not contain information by sex, age, and ethnicity, it was necessary to match the TRADOC data set with the Enlisted Master File (EMF), which contained information in the appropriate cross-classifications. EMF data covered only a 50% sample of all

soldiers with Social Security numbers ending in digits 5 through 9. In addition, the computerized match between EMF data and ESL enrollees (on the TRADOC data set) was successful in only 60% of the cases, mainly because of missing or incomplete data. In other words, the EMF-TRADOC match resulted in 30% (i.e., 50% times 60%) of the available data or 1,160 cases; and, as we have seen, the available data already represented an underestimate of the actual totals. An adjustment of 3.33 (i.e., 1 divided by 30%) was made to produce a corrected EMF-TRADOC match of 3,863.

The adjustments were brought together in a systematic manner. First, the weighting factor of 1.6 (adjusting for the fact that only 62.5% of eligible soldiers actually enrolled in ESL during the 3-year period) was multiplied by 6,000 (the probable top figure of actual enrollees for FY 79-82 according to the special survey) to obtain the figure of 9,600. This figure 9,600 was divided by 3,863 (the corrected EMF-TRADOC match), producing a weighting factor of 2.485 for the three-year period. Because we wanted to obtain a one-year weighting factor, we divided 2,485 by 3 and obtained a final weighting factor of .828.

The EMF-TRADOC matched data were adjusted by the final weighting factor of .828 to obtain ESL eligibility figures for one year, circa 1980. The EMF data did not categorize Puerto Ricans as insular or continental, so only the total Puerto Rican category was usable, along with the category of other Hispanics. Then the ESL eligibility figures were divided by FY 81 accession figures to obtain ESL eligibility rates. These rates were then multiplied by the accession projections for 1985, 1990, 1995, and 2000 to obtain projections of ESL eligibility for those years by sex, age, and ethnicity.

The final issue remaining focuses on how to distribute within sex, age, and ethnic group the adjusted ESL-eligible totals. Because we had no additional information on how to distribute these persons, they were distributed in proportion to the percentage they already represent. That is, for example, if male Puerto Ricans age 17 comprised 5% of the unadjusted ESL-eligible figure, then they made up 5% of the adjusted total. There may be problems with this, because some groups (e.g., females) may have slightly greater attrition and should therefore perhaps represent a slightly greater proportion of the unadjusted than the adjusted totals. However, in the absence of solid facts to help us determine differential weights after a thorough review of all available data, we chose to apply the simpler proportional distribution scheme, in which a single group had the same proportional distribution for unadjusted and adjusted figures.

## Contrast Is Shown Between Total Spanish Origin Accessions and ESL-Eligible Spanish Origin Accessions

Table 13 (see appendix) presents a comparison between total Spanish origin accessions and ESL-eligible Spanish origin accessions in 1980 and 2000 by sex. This comparison was made by using totals from accession tables (6 and 7) and tables of ESL eligibility (11 and 12).

## RESULTS EXHIBIT LARGE INCREASES IN MANY CATEGORIES

Results of this investigation are presented in narrative form below and in tables in the appendix. The general order of results is Spanish origin population projections, comparisons with total U.S. and Black U.S. projections, Spanish origin Army accession rates and projections, comparisons with total Army accessions, ESL rates and projections, and comparisons with total Spanish origin accessions.

### Hispanic Population Projections Show Substantial Increases

As can be seen in Tables 1 and 2, the Hispanic population of the U.S. (age 17-35) was projected to grow by more than one-third between 1980 and the year 2000. Such a large increase compares to a gain of only one-ninth for Blacks of this age and a decline for Whites.

Overall, all ethnic groups within the total Hispanic group (age 17-35) showed appreciable increases, but Puerto Ricans increased less than other Hispanics. Continental Puerto Ricans were projected to increase more than insular Puerto Ricans among those persons 21 and over but not among persons under 21. All Hispanics under 26 showed projected increases of 20% to 25%, while those 26 and over were projected to increase more than twice as much.

Insular Puerto Rican males in that age group showed an increase of 8.6%, moving from 464,000 in 1980 to 504,000 in 2000. Continental Puerto Rican males were projected to increase 38.9%, from 352,000 to 489,000. Total Puerto Rican males (insular and continental combined) showed a 21.7% increase, from 816,000 to 993,000. Other Hispanic males were projected to increase by 40.6%, from 2,323,000 to 3,267,000. A similar increase, 40.4%, was found for all Hispanic males excluding insular Puerto Ricans (2,675,000 to 3,756,000). The increase for all Hispanic males including insular Puerto Ricans was 35.7%, from 3,139,000 to 4,260,000. Similar increases were found for females, except for continental and total Puerto Rican females whose increases were less than those of comparable males.

Age differences by ethnic group were striking in the male Spanish origin population projections. For continental Puerto Rican males, earlier accession ages (17 and 18) showed decreases between 1980 and the year 2000, while later accession ages (19 through 35) produced projected increases that were higher with age. For example, age 17 continental Puerto Rican males had a projected decrease of 8.7%, while age 26-35 continental Puerto Rican males had a projected increase of 73% during the last two decades of this century. Age differences for insular Puerto Rican males were not as impressive. Other, non-Puerto Rican Hispanic males showed a relatively stable level of increase (in the 20% to 30% range) for all accession age groups except for 26-35, which displayed a 60.7% increase.

Among females, continental Puerto Ricans showed decreases between 1980 and the year 2000 for younger ages (17 and 18), no change for age 19-20, and substantial increases up to age 35 (the largest increase being 38.2% for age 26-35). Non-Puerto Rican Hispanic females showed much the same pattern as males--consistently dramatic growth, particularly in age 26-35.

## Comparison with Total U.S. and Black Populations Exhibits Greater Growth for Hispanics

A comparison with the total U.S. population and the Black U.S. population, age 17-35, for the years 1980 and 2000 indicates that the U.S. Hispanic population of those ages was projected to increase by 36.1% (from 6,234,000 to 8,486,000), as compared to an increase of 11.5% for the same age Black U.S. population (from 9,268,000 to 10,335,000) and a decrease of 8% for the same age total U.S. population including insular Puerto Ricans (from 76,066,000 to 69,956,000). In terms of changes in percentage of the total U.S. population, Hispanics were projected to move from 8.2% to 12.1% (+3.9%), and Blacks were projected to increase from 12.2% to 14.8% (+2.6%). These figures count some but not all the undocumented Hispanics who might have already entered the U.S. It is possible that if the total number of undocumented Hispanic immigrants were known, Hispanics might represent a greater percentage of the U.S. population than Blacks would in the year 2000. However, we cannot state this as a fact without far more solid evidence.

## Hispanic Accession Rates Are Higher for Males than Females and for Puerto Ricans than Other Hispanics

As shown in Tables 4 and 5, Hispanic accession rates were higher for males than females and for Puerto Ricans than other Hispanics. FY 81 accession rates, reported in accessions per 1,000, were in general highest for insular Puerto Ricans (5.057 among males and .393 among females), as compared with continental Puerto Ricans (1.707 among males and .289 among females), total Puerto Ricans (3.612 among males and .349 among females), other Hispanics (1.271 among males and .183 among females), all Hispanics excluding insular Puerto Ricans (1.328 among males and .198 among females), and all Hispanics including insular Puerto Ricans (1.879 among males and .230 among females).

Because other Hispanics grow more rapidly than Puerto Ricans, by the year 2000 there are relatively more of the former. Since their accession rate is less than half that of Puerto Ricans, this increase in their relative numbers reduces the accession rate for all Hispanics. This is an example of the total vs. subgroup weighting described as part of the accession projection methodology.

Current Army policy limits the number of female accessions allowed to join the Army, so it was predictable that the accession rates for Hispanic males would be much larger than the accession rates for Hispanic females. For various Hispanic ethnic groups, the ratio of males to females was about eight to one.

Age differences were marked for accession rates, as would be expected. Younger age groups, such as 18 and 19-20, had higher accession rates than older age groups and than 17-year-olds. For example, 18-year-old insular Puerto Rican males had the highest accession rate of any Hispanics: 16.032 per 1,000, while insular Puerto Rican males in the broad age group of 26-35 had a rate of 1.624 per 1,000. Similar patterns were shown for females, although the rate of female accession was much smaller.

## ACCESSION PROJECTIONS SHOW ETHNIC, SEX, AND AGE DIFFERENCES

Like the accession rates just discussed, the accession projections (see Tables 6 and 7) displayed differences by sex, age, and ethnicity. Patterns, however, were not exactly the same as those of the accession rates.

For the entire age group, 17-35, non-Puerto Rican (other) Hispanic males had a slightly higher number of accessions in 1980 (2,952) than did total Puerto Rican males in that year (2,946), with the gap between non-Puerto Rican Hispanic males and total Puerto Rican males widening by the year 2000 (3,802 vs. 3,191). Again, similar patterns were found for females, though with smaller numbers. Even though Puerto Ricans, especially insular Puerto Ricans, showed very high accession rates, the relatively small number of Puerto Ricans in the total U.S. population (against which the accession rates were applied) produced smaller numbers of projected Puerto Rican accessions than projected non-Puerto Rican accessions.

Insular Puerto Ricans consistently had higher accession projections than continental Puerto Ricans for both sexes. Clear age differences were found for males and females. Projected accession tended to peak in the age groups of 18 and 19-20, although there were some fluctuations by Hispanic ethnic group within age categories.

Percentage point increases were not reported in Tables 6 and 7, because those percentage point increases would mirror the ones shown for population projections in Tables 1 and 2 when accession rates were held stable for any given age, sex, and ethnic group (other than the three "total" categories--total Puerto Ricans, all Hispanics including insular Puerto Ricans, and all Hispanics excluding insular Puerto Ricans).

### Hispanic Accessions Grow as Proportion of Total Accessions

Table 8 contains a comparison of total Army accessions and Spanish origin accessions circa 1980 and 1990 in ages 17-35. The proportion of Spanish origin accessions as part of total accessions in 1980 was 5.0% (6,610 out of 133,186), while the proportion of Spanish origin accessions as part of total accessions in 1990 was projected to be approximately 5.8% (7,863 out of 135,300). These figures indicate a growth of approximately 1% when Spanish origin accessions are compared to total accessions. No information on projected or desired total Army accessions was available beyond 1990.

### ESL Eligibility Rates Are Much Higher for Hispanic Males Than for Hispanic Females

As shown in Tables 9 and 10, ESL eligibility rates were found to be far higher for Hispanic males than for Hispanic females. Overall, ESL eligibility rates were 260 per 1,000 accessions for Puerto Rican males age 17-35 and 91 per 1,000 accessions for Puerto Rican females of the same age. For other Hispanics, ESL eligibility rates were 22 per 1,000 accessions for males and 6 per 1,000 accessions for females in the accession age bracket of 17-35.

The highest ESL eligibility rates of all were evident for Puerto Rican males of age 21-22 (416 per 1,000 accessions), followed by Puerto Rican males of age 19-20 (403 per 1,000 accessions). This means that about 40% of those

individuals were anticipated to be limited in English proficiency. Female ESL eligibility rates peaked at age 19-20 (123 per 1,000 accessions).

ESL Eligibility Projections Demonstrate Slight to Moderate Increases

As Tables 11 and 12 show, ESL eligibility projections for Hispanic male and female accessions age 17-35 demonstrated slight to moderate increases for several categories. Males were projected to outnumber females greatly in terms of ESL eligibility. Overall, ESL-eligible Hispanic males were projected to increase from 829 in 1980 to 915 in the year 2000. Comparable figures for females were 31 in 1980 and 33 in 2000.

ESL eligibility projections were about ten times higher for Puerto Ricans than for other Hispanics in the general age group of 17-35, though variations occurred in some of the smaller age categories.

In terms of percentage increases in ESL eligibility for the overall 17-35 age group, females demonstrated negligible projected gains between 1980 and the year 2000. Among males, Puerto Ricans increased 8.9%, other Hispanics 28.1%, and all Hispanics 10.4% in terms of ESL eligibility.

Comparison of ESL-Eligible Hispanic Accessions with Total Hispanic Accessions Indicates Little Change Across Years

The proportion of Hispanic accessions eligible for ESL instruction was not projected to change dramatically between 1980 and the year 2000, as seen in Table 13. ESL-eligible soldiers were projected to decrease slightly as a proportion of the total Hispanic accession population (from 14.1% to 13.1%), and female ESL-eligible soldiers were also projected to decrease slightly (from 4.4% to 3.8%). The total number of ESL-eligible Hispanic soldiers was projected to increase from 860 to 948. However, in terms of the percentage of the total Hispanic accession population, this change represents a slight decline, from 13.0% to 12.1%. Given the potential unreliability of the ESL eligibility projections, these projected changes should not be taken too literally.

Summary of Results Displays Hispanic Growth Patterns

The Hispanic population of the U.S. age 17-35 was projected to grow substantially between 1980 and the end of the century. All Hispanic ethnic groups in that age bracket showed large gains, especially non-Puerto Rican Hispanic males, who had a gain of 40.6% as compared with 21.7% for Puerto Rican males. Various Hispanic ethnic groups exhibited different age-related growth patterns.

The U.S. Hispanic population (including insular Puerto Ricans) age 17-35 was projected to increase by an overall 36.1% in the years between 1980 and 2000, as compared with an increase of 11.5% for the Black U.S. population of the same age and a decrease of 8% for the total U.S. population in the same age group. In terms of changes in percentage of the total U.S. population in this age bracket, Hispanics were projected to increase from 8.2% to 12.1%, and Blacks were projected to grow from 12.2% to 14.8%. If all undocumented Hispanic immigrants were included in the Hispanic totals, Hispanics might overtake Blacks in terms of proportion of the total U.S. population by the end of the century, although this is pure speculation.

Hispanic accession rates in FY 81 were higher for males than females and for Puerto Ricans than other Hispanics. Accession rates were largest for insular Puerto Ricans (5.057 per 1,000 for males and .393 per 1,000 for females). Younger age groups, such as 18 through 20, had higher accession rates than older age groups. As expected based on current Army policy, accession rates for Hispanic males exceeded accession rates for Hispanic females by about eight to one.

Accession projections for Hispanics in the 17-35 age group were not patterned exactly the same as accession rates. Non-Puerto Ricans were projected to have more accessions than Puerto Ricans in the period from 1980 to 2000. Insular Puerto Ricans had higher accession projections than continental Puerto Ricans. Projected accessions tended to peak at the younger ages, 17 to 20.

Hispanic accessions were projected to grow as a proportion of total Army accessions between 1980 and 1990--from 5.0% to 5.8%. No information on projected or desired total Army accessions was available beyond 1990.

ESL eligibility rates were found to be much higher for Hispanic males than Hispanic females. Puerto Ricans had higher ESL eligibility rates than other Hispanics. Highest ESL eligibility rates were exhibited by Puerto Rican males age 21-22.

Projections of ESL eligibility among Hispanic accessions age 17-35 showed slight to moderate increases between 1980 and the end of the century. Males were projected to outnumber females by a very large factor in terms of ESL eligibility. Furthermore, ESL eligibility projections were about ten times higher for Puerto Ricans than for other Hispanics of accession ages. The proportion of Hispanic accessions eligible for ESL instruction was not projected to change dramatically between 1980 and 2000. Possible unreliability of ESL projections must be taken into account when using these data.

A few caveats are necessary to understand the results just presented. These caveats are presented next.

## CAVEATS CONCERN VARIABLE ASSUMPTIONS AND REPEATED PROJECTIONS

To the best of our knowledge, these projections of Hispanic accessions and of the number among them expected to need English-language training are the best available to the Army. Nevertheless, they could be better if more resources were available. Resource constraints did not allow us to try to produce a set of projections based on more than one assumption regarding rates of Hispanic immigration, accession, ESL eligibility, and national unemployment. If there were at least two assumptions about the future trend of each of these factors, then it would be possible to assess the relative impact of each factor on the projected number of ESL-eligible Hispanics in the Army. A set of projections would also provide a range of variation rather than a single set of numbers. There would, of course, then be a need to indicate the relative likelihood of occurrence of each projection in the set. But the analyses underlying the choice of alternative assumptions would provide some basis for estimating, even if only roughly, these probabilities.

Another thing we did not have an opportunity to do is judge whether it would be less costly to overestimate or underestimate the future number of ESL-eligible soldiers. With a single set of projections, such as ours, this means judging whether it is more cost effective to take the projected numbers as maxima or as minima and to plan accordingly. With two or more sets of projections, it means judging the relative costs of being wrong in accepting the high or the low set. Then, combining these judgments with the estimates of the probability of occurrence of each set of projections, one could judge on which set it would be most cost effective to base one's plans.

Finally, it should be noted that because of the large number of contingencies which it is virtually impossible to foresee or even consider in the analyses underlying the projections, the accuracy of projections tends to deteriorate with time. For example, the current projections cannot and do not take into account any unpredictable changes in Army accession policy. Such changes would, of course, affect the accuracy of any projections. It is advisable, therefore, to make new projections periodically, taking into account the available data about the period since the last projections, as well as any new or revised data about the period since the last projections. The frequency with which new projections should be made varies, depending on such factors as the degree of variability of the phenomena being projected, the potential value for planning, any policy changes affecting the phenomena, the degree of precision needed for planning, and the cost of making the projections. Hence, no fixed rule is useful. Doing the research needed to decide on the optimum frequency of making projections deserves high priority.

## THE PROJECTIONS HAVE IMPLICATIONS FOR ARMY INSTRUCTIONAL AND MANPOWER PROGRAMS

The results presented above have major implications for the Army. First, due to higher rates of Hispanic limited English proficient accessions, the Army will have an increasing need to provide high quality English-as-a-second-language instruction. Key elements in such instruction are discussed by Oxford-Carpenter, Harman, and Redish (1983). These elements include more emphasis on oral-aural skills inside and outside of the classroom, more concern for adequate teacher training in ESL, realistic appraisal of entry levels and of what can be achieved in the allotted ESL training time, and a job-related approach to ESL instruction.

Second, we have seen that the Hispanic population is young and growing, while the overall U.S. population is older and shrinking. Therefore, Hispanics should be considered as a potential source of able and available manpower for the next two decades and thereafter. Although no recruiting campaign is planned to enlist Hispanics, such a campaign might be useful for long-range manning of the force.

Third, Puerto Rican males will continue to be the main recipients of ESL instruction at least to the year 2000, if current trends continue. Hispanic females in general will require much less ESL instruction than Hispanic males. Perhaps Hispanic females can serve as peer tutors to Hispanic males who are having English language difficulties.

Fourth, manpower and personnel specialists should be aware that the influx of Spanish origin accessions may bring with it a number of linguistic, cultural, and sociological differences. These differences must be understood and considered in the day-to-day Army routine. For example, Hispanics are often found to be extremely patriotic, hard-working, and able to cope well with authority. They often come from very closely knit, religious families. These traits must be acknowledged and can be used to the Army's advantage, particularly for unit cohesion.

Fifth, for recruiting and retention purposes the Army might want to capitalize on the generally high interest in training and education displayed by Hispanics who are limited in English proficiency. The high motivation level of Hispanic ESL-eligible recruits has been documented by Holland, Rosenbaum, Stoddart, Redish, Harman, and Oxford-Carpenter (1984). The increasing number of this type of individual makes it wise to build on that training-related motivation.

Sixth, selection and classification techniques may need to be refined to handle the generally bright, well educated Puerto Ricans who dominate the Army's limited English proficient population. The skills of these recruits need to be appropriately used by the Army in the years to come. The ability and motivation of many Hispanic soldiers should be recognized and used in job selection and classification. For many of these soldiers, the language problem is the main factor which bars them from more prestigious or more technical jobs in the Army. Therefore, the Army must consider how to assess fairly the aptitude of an individual who is deficient in English language skills. A Spanish-language version of the Armed Services Vocational Aptitude Battery (ASVAB) exists but has not been used widely. The currently used English version of the ASVAB may underestimate the aptitudes of some Hispanic applicants. Selection and classification planners need to consider ways to optimize the use of the skills of Hispanic soldiers who have English language problems.

Seventh, a more uniform method for determining who should be assessed for limited English proficiency is desirable for the Army. Decisions about who should take the language screening test, the ECLT, are made in different ways in different locations. Despite regulations, Army operational schedules and immediate manpower needs sometimes cause decisions about who is finally enrolled in ESL training to be made differently, as well. Perhaps all Army accessions should routinely be given the ECLT, which needs only a short administration time. The Navy has experimented with just such a program recently on a pilot basis. A more standardized procedure would assure that all who need such instruction get it and would improve the Army's record-keeping system.

Eighth, future Army accession projection research could use variable assumptions, such as different accession rates across time based on changing economic conditions. A larger investigation would, of course, be necessary, but the yield would be worth the effort.

Finally, better and more complete records would help reduce undercounts and would provide the Army with more reliable data for planning its many programs in the areas of training and manpower. In fact, the Army could use a separate investigation of the number and characteristics of its current Hispanic accession population, as well as trend data over time on that population. Clearly, projections are necessary for long-range planning within the Army. The quality of projections depends largely upon the quality of available data.

## REFERENCES


Bouvier, L., Davis, C., & Haupt, R. Projections of the Hispanic Population in the United States 1980-2000. Washington, D.C.: Population Reference Bureau, 1983.

Dale, C., & Gilroy, C. The effects of the business cycle on the size and composition of the U.S. Army. Atlantic Economic Journal, 1983, 11(1).

Davis, C., Haub, C., & Willette, J. U.S. Hispanics: Changing the face of America. Population Bulletin, 1983, 38(3), p. 3.

Defense News Branch. Fact sheet on "Profile of American Youth." Washington, D.C.: Department of Defense, February 1982.

Deputy Chief of Staff for Operations and Plans. The Army plan (Army guidance, vol. I) 1985-1999. Washington, D.C.: Department of the Army, December 1981.

Directorate of Information, Operations, and Reports. Department of Defense selected manpower statistics, FY 81. Washington, D.C.: Department of Defense, 1981.

Dubois, D. D. The Children's English and Services Study: A methodological review. Publication No. 80-503. Washington, D.C.: National Center for Education Statistics, 1980.

Elton, R. M. ODCSPER Form 1, FY 85-89 program objective memorandum. Office of the Deputy Chief of Staff for Personnel, Department of the Army, 1983.

Gendell, M., Pol, L., & Oxford-Carpenter, R. Report on the project seeking to produce projections of insular Puerto Rican limited English proficient persons to the year 2000 for U.S. Army English-as-a-second-language training. Alexandria, Va.: U.S. Army Research Institute for the Behavioral and Social Sciences, 1982.

Holland, V. M., Rosenbaum, H., Stoddart, S., Redish, J., Harman, J., & Oxford-Carpenter, R. English-as-a-second-language programs in Basic Skills Education Program I. Technical Report 1359. Alexandria, Va.: U.S. Army Research Institute for the Behavioral and Social Sciences, 1984.

Krug, R. E., & Wise, L. L. Analysis of BSEP I and II data files. Research Memorandum 82-1. Washington, D.C.: American Institutes for Research, 1982.

Lord, G., & Barnes, D. Personnel assessment 2002. Washington, D.C.: Personnel Plans and Systems Directorate, Office, Deputy Chief of Staff for Personnel, Department of the Army, 1983.

Macias, R. F. U.S. Hispanics in 2000 A.D.--projecting the number. Agenda, May-June 1977, 16-19.

Maier, M. H., & Grafton, F. C. Scaling Armed Services Vocational Aptitude Battery (ASVAB) Form 8AX. Research Report 1301. Alexandria, Va.: U.S. Army Research Institute for the Behavioral and Social Sciences, 1981.

Miller, L. Estimates of the population of the United States, by age, sex, and race: 1980 to 1982. Current Population Reports, Population Estimates and Projections. Series P-25, No. 929. Washington, D.C.: U.S. Bureau of the Census, 1983.

Office of Assistant Secretary of Defense for Manpower, Reserve Affairs, and Logistics. Profile of American Youth: 1980 Administration of the Armed Services Vocational Aptitude Battery. Washington, D.C.: Department of Defense, 1982.

Office of Equal Opportunity Programs. Information paper: Demographics. Washington, D.C.: Deputy Chief of Staff for Personnel, Department of the Army, December 1981.

O'Malley, J. M. Children's English and Services Study: Language minority children with limited English proficiency in the United States. Rosslyn, Va.: National Clearinghouse for Bilingual Education, 1981.

O'Malley, J. M. Children's English and Services Study: Educational needs assessment for language minority children with limited English proficiency. Rosslyn, Va.: National Clearinghouse for Bilingual Education, 1982.

Oxford, R., Pol, L., Lopez, D., Stupp, P., Gendell, M., & Peng, S. Projections of non-English language background and limited English proficient persons in the United States to the year 2000: Educational planning in the demographic context. Journal of the National Association for Bilingual Education, 1981, 5(3), 1-30.

Oxford-Carpenter, R., Harman, J., & Redish, J. English-as-a-second-language programs in the Army. Paper presented at the annual meeting of the American Educational Research Association, Montreal, Canada, April 1983.

Oxford-Carpenter, R., Pol, L., Lopez, D., Stupp, P., Gendell, M., & Peng, S. Changes in number of non-English language background and limited English proficient persons in the United States to the year 2000: Projections and how they were made. Rosslyn, Va.: National Clearinghouse for Bilingual Education, 1984.

Peng, S., Oxford, R., Stupp, P., & Pol, L. Estimation of the number of children with limited English proficiency: A review of analytic procedures. Journal of the National Association for Bilingual Education, 1982, 7(1), 37-52.

Pol, L., Oxford-Carpenter, R., & Gendell, M. Use of self-reported and other-reported language proficiency ratings in making projections of limited English proficient populations. In preparation.

Pol, L., Oxford-Carpenter, R., & Peng, S. Limited English proficiency: Analytical techniques and projections. In E. Garcia & R. Padilla, Eds., Advances in bilingual education research. Tempe, Ariz.: University of Arizona Press, in press.

Puerto Rican Planning Board. Preliminary projections of insular Puerto Ricans to the year 2000, unpublished manuscript, 1984.

Russell, C. The news about Hispanics. American Demographics, March 1983, 15-25.

Stolz, W., & Bruck, M. Final report: A project to develop a measure of English language proficiency. Arlington, Va.: Center for Applied Linguistics, 1976.

Taylor, W. J. et al. (not named). Army manpower issues for the 1990s. Moving from "zero sum" to the prisoner's dilemma. Army 2000 project. Washington, D.C.: Georgetown University Center for Strategic and International Studies. Draft manuscript, not dated.

U.S. Bureau of the Census. Special studies: Language usage in the United States: July 1975 (advance report). Current Population Reports. Series P-23, No. 60, revised. Washington, D.C.: U.S. Department of Commerce, 1975.

U.S. Bureau of the Census. Projections of the population of the United States: 1982 to 2050 (advance report). Current Population Reports, Population Estimates and Projections. Series P-25, No. 922. Washington, D.C.: U.S. Department of Commerce, 1982.

Waggoner, D. Geographic distribution, nativity, and age distribution of language minorities in the United States: Spring 1976. Bulletin 78-5. Washington, D.C.: National Center for Education Statistics, 1978.

Warren, R., & Passel, J. S. Estimates of illegal aliens from Mexico counted in the 1980 United States Census. Paper presented at the annual meeting of the Population Association of America, Pittsburgh, Pennsylvania, April 1983.

## APPENDIX: TABLES OF RESULTS


| | | Page |
|---|---|---|
| 1. | Male Spanish Origin U.S. Population Projections Age 17-35 by Age and Ethnicity (in Thousands). . . . . | A-3 |
| 2. | Female Spanish Origin U.S. Population Projections Age 17-35 by Age and Ethnicity (in Thousands). . . . . | A-5 |
| 3. | Spanish Origin U.S. Population, Black U.S. Population, and Total U.S. Population in Years 1980 and 2000, Age 17-35, (in Thousands) . . . . . | A-7 |
| 4. | Male Spanish Origin Accession Rates by Age and Ethnicity, circa 1980 . . . . . | A-8 |
| 5. | Female Spanish Origin Accession Rates by Age and Ethnicity, circa 1980 . . . . . | A-10 |
| 6. | Male Spanish Origin Accession Projections Age 17-35 by Age and Ethnicity . . . . . | A-12 |
| 7. | Female Spanish Origin Accession Projections Age 17-35 by Age and Ethnicity . . . . . | A-14 |
| 8. | Comparison of Total Army Accessions and Spanish Origin Army Accessions Age 17-35, circa 1980 and circa 1990 . . . . . | A-16 |
| 9. | Male Spanish Origin ESL Eligibility Rates Age 17-35 by Age and Ethnicity . . . . . | A-17 |
| 10. | Female Spanish Origin ESL Eligibility Rates Age 17-35 by Age and Ethnicity . . . . . | A-18 |
| 11. | Male Spanish Origin ESL Eligibility Projections Age 17-35 by Age and Ethnicity . . . . . | A-19 |
| 12. | Female Spanish Origin ESL Eligibility Projections Age 17-35 by Age and Ethnicity . . . . . | A-20 |
| 13. | Comparison of Total Spanish Origin Accessions and ESL-Eligible Spanish Origin Accessions in 1980 and 2000, Age 17-35, by Sex. . . . . | A-21 |

Table 1

Male Spanish Origin Population Projections Age 17-35 by Age and Ethnicity

(in Thousands)

| Age | Ethnicity | Year | | | | | Percentage point change 1980-2000 |
|---|---|---|---|---|---|---|---|
| | | 1980 | 1985 | 1990 | 1995 | 2000 | |
| 17 | Insular PR | 35 | 33 | 34 | 33 | 35 | 0 |
| | Continental PR | 23 | 22 | 20 | 23 | 21 | - 8.7 |
| | Total PR | 58 | 55 | 54 | 56 | 56 | - 3.4 |
| | Other Hispanic | 145 | 131 | 150 | 163 | 186 | +28.3 |
| | All Hispanic excluding insular PR | 168 | 153 | 170 | 186 | 207 | +23.2 |
| | All Hispanic including insular PR | 203 | 186 | 204 | 219 | 242 | +19.2 |
| 18 | Insular PR | 32 | 34 | 34 | 33 | 34 | + 6.3 |
| | Continental PR | 22 | 22 | 21 | 23 | 21 | - 4.5 |
| | Total PR | 54 | 56 | 55 | 56 | 55 | + 1.9 |
| | Other Hispanic | 144 | 132 | 147 | 163 | 185 | +28.5 |
| | All Hispanic excluding insular PR | 166 | 154 | 168 | 186 | 206 | +24.1 |
| | All Hispanic including insular PR | 198 | 188 | 202 | 219 | 240 | +21.2 |
| 19-20 | Insular PR | 58 | 66 | 64 | 62 | 63 | + 8.6 |
| | Continental PR | 46 | 47 | 48 | 45 | 48 | + 4.3 |
| | Total PR | 104 | 113 | 112 | 107 | 111 | + 6.7 |
| | Other Hispanic | 299 | 282 | 306 | 320 | 376 | +25.8 |
| | All Hispanic excluding insular PR | 345 | 329 | 354 | 365 | 424 | +22.9 |
| | All Hispanic including insular PR | 403 | 395 | 418 | 427 | 487 | +20.8 |
| 21-22 | Insular PR | 52 | 59 | 55 | 56 | 55 | + 5.8 |
| | Continental PR | 42 | 49 | 47 | 44 | 50 | +19.0 |
| | Total PR | 94 | 108 | 102 | 100 | 105 | +11.7 |
| | Other Hispanic | 287 | 305 | 283 | 313 | 345 | +20.2 |
| | All Hispanic excluding insular PR | 329 | 354 | 330 | 357 | 395 | +20.1 |
| | All Hispanic including insular PR | 381 | 413 | 385 | 413 | 450 | +18.1 |

Table 1 (Continued)

| Age | Ethnicity | Year 1980 | 1985 | 1990 | 1995 | 2000 | Percentage point change 1980-2000 |
|---|---|---|---|---|---|---|---|
| 23-25 | Insular PR | 73 | 75 | 84 | 82 | 79 | + 8.2 |
| | Continental PR | 60 | 75 | 76 | 75 | 74 | +23.3 |
| | Total PR | 133 | 150 | 160 | 157 | 153 | +15.0 |
| | Other Hispanic | 412 | 478 | 441 | 482 | 510 | +23.8 |
| | All Hispanic excluding insular PR | 472 | 553 | 517 | 557 | 584 | +23.7 |
| | All Hispanic including insular PR | 545 | 628 | 601 | 639 | 663 | +21.7 |
| 26-35 | Insular PR | 214 | 219 | 225 | 237 | 238 | +11.2 |
| | Continental PR | 159 | 207 | 260 | 279 | 275 | +73.0 |
| | Total PR | 373 | 426 | 485 | 516 | 513 | +37.5 |
| | Other Hispanic | 1,036 | 1,405 | 1,644 | 1,654 | 1,665 | +60.7 |
| | All Hispanic excluding insular PR | 1,195 | 1,612 | 1,904 | 1,933 | 1,940 | +62.3 |
| | All Hispanic including insular PR | 1,409 | 1,831 | 2,129 | 2,170 | 2,178 | +54.6 |
| 17-35 | Insular PR | 464 | 486 | 496 | 503 | 504 | + 8.6 |
| | Continental PR | 352 | 422 | 472 | 489 | 489 | +38.9 |
| | Total PR | 816 | 908 | 968 | 992 | 993 | +21.7 |
| | Other Hispanic | 2,323 | 2,733 | 2,971 | 3,095 | 3,267 | +40.6 |
| | All Hispanic excluding insular PR | 2,675 | 3,155 | 3,443 | 3,584 | 3,756 | +40.4 |
| | All Hispanic including insular PR | 3,139 | 3,641 | 3,939 | 4,087 | 4,260 | +35.7 |

Note. Rounding may cause deviations in totals. Data sources: Miller (1983) and Population Reference Bureau (Bouvier, Davis, & Haupt, 1983) for 1980 data. For projection years 1985 on, Population Reference Bureau (Bouvier, Davis, & Haupt, 1983) for continental Puerto Ricans and other Hispanics and Puerto Rican Planning Board (1984) for insular Puerto Ricans. Totals for all years (total Puerto Ricans, all Hispanics including/excluding insular Puerto Ricans) were obtained by addition and subtraction. PR = Puerto Rican.

Table 2

Female Spanish Origin Population Projections Age 17-35 by Age and Ethnicity

(in Thousands)

| Age | Ethnicity | Year | | | | | Percentage point change 1980-2000 |
|---|---|---|---|---|---|---|---|
| | | 1980 | 1985 | 1990 | 1995 | 2000 | |
| 17 | Insular PR | 34 | 32 | 33 | 33 | 34 | 0 |
| | Continental PR | 23 | 21 | 20 | 22 | 20 | -13.0 |
| | Total PR | 57 | 53 | 53 | 55 | 54 | - 5.3 |
| | Other Hispanic | 134 | 128 | 144 | 157 | 179 | +33.6 |
| | All Hispanic excluding insular PR | 157 | 149 | 164 | 179 | 199 | +26.8 |
| | All Hispanic including insular PR | 191 | 181 | 197 | 212 | 233 | +22.0 |
| 18 | Insular PR | 32 | 34 | 33 | 32 | 33 | + 3.1 |
| | Continental PR | 22 | 21 | 20 | 22 | 20 | - 9.1 |
| | Total PR | 54 | 55 | 53 | 54 | 53 | - 1.9 |
| | Other Hispanic | 132 | 131 | 143 | 158 | 179 | +35.6 |
| | All Hispanic excluding insular PR | 154 | 152 | 163 | 180 | 199 | +29.2 |
| | All Hispanic including insular PR | 186 | 186 | 196 | 212 | 232 | +24.7 |
| 19-20 | Insular PR | 63 | 68 | 65 | 63 | 65 | + 3.2 |
| | Continental PR | 45 | 45 | 45 | 42 | 45 | 0 |
| | Total PR | 108 | 113 | 110 | 105 | 110 | + 1.9 |
| | Other Hispanic | 275 | 275 | 300 | 312 | 368 | +33.8 |
| | All Hispanic excluding insular PR | 320 | 320 | 345 | 354 | 413 | +29.1 |
| | All Hispanic including insular PR | 383 | 388 | 410 | 417 | 478 | +24.8 |
| 21-22 | Insular PR | 57 | 63 | 59 | 61 | 60 | + 5.3 |
| | Continental PR | 43 | 47 | 44 | 44 | 46 | + 7.0 |
| | Total PR | 100 | 110 | 103 | 105 | 106 | + 6.0 |
| | Other Hispanic | 263 | 289 | 280 | 307 | 336 | +27.8 |
| | All Hispanic excluding insular PR | 306 | 336 | 324 | 351 | 382 | +24.8 |
| | All Hispanic including insular PR | 363 | 399 | 383 | 412 | 442 | +21.8 |

Table 2 (Continued)

| Age | Ethnicity | Year 1980 | 1985 | 1990 | 1995 | 2000 | Percentage point change 1980-2000 |
|---|---|---|---|---|---|---|---|
| 23-25 | Insular PR | 82 | 86 | 94 | 90 | 87 | + 6.1 |
| | Continental PR | 64 | 70 | 69 | 69 | 68 | + 6.3 |
| | Total PR | 146 | 156 | 163 | 159 | 155 | + 6.2 |
| | Other Hispanic | 384 | 443 | 438 | 476 | 502 | +30.7 |
| | All Hispanic excluding insular PR | 448 | 513 | 507 | 545 | 570 | +27.2 |
| | All Hispanic including insular PR | 530 | 599 | 601 | 635 | 657 | +24.0 |
| 26-35 | Insular PR | 243 | 251 | 264 | 277 | 278 | +14.4 |
| | Continental PR | 178 | 215 | 247 | 253 | 246 | +38.2 |
| | Total PR | 421 | 466 | 511 | 530 | 524 | +24.5 |
| | Other Hispanic | 1,021 | 1,324 | 1,544 | 1,612 | 1,660 | +62.6 |
| | All Hispanic excluding insular PR | 1,199 | 1,539 | 1,791 | 1,865 | 1,906 | +59.0 |
| | All Hispanic including insular PR | 1,442 | 1,790 | 2,055 | 2,142 | 2,184 | +51.5 |
| 17-35 | Insular PR | 511 | 534 | 548 | 556 | 557 | + 9.0 |
| | Continental PR | 375 | 419 | 445 | 452 | 445 | +18.7 |
| | Total PR | 886 | 953 | 993 | 1,008 | 1,002 | +13.1 |
| | Other Hispanic | 2,209 | 2,590 | 2,849 | 3,022 | 3,224 | +45.9 |
| | All Hispanic excluding insular PR | 2,584 | 3,009 | 3,294 | 3,474 | 3,669 | +42.0 |
| | All Hispanic including insular PR | 3,095 | 3,543 | 3,842 | 4,030 | 4,226 | +36.5 |

Note. Rounding may cause deviations in totals. Data sources: Miller (1983) and Population Reference Bureau (Bouvier, Davis, & Haupt, 1983) for 1980 data. For projection years 1985 on, Population Reference Bureau (Bouvier, Davis, & Haupt, 1983) for continental Puerto Ricans and other Hispanics and Puerto Rican Planning Board (1984) for insular Puerto Ricans. Totals for all years (total Puerto Ricans, all Hispanics including/excluding insular Puerto Ricans) were obtained by addition and subtraction. PR = Puerto Rican.

Table 3

Spanish Origin U.S. Population, Black U.S. Population, and Total U.S. Population in Years 1980 and 2000, Age 17-35

(in Thousands)

| Ethnicity | Total by year 1980 | Total by year 2000 | Percentage point change within group 1980-2000 | Percentage of total U.S. population by year 1980 | Percentage of total U.S. population by year 2000 | Percentage point change for group as part of total U.S. population 1980-2000 |
|---|---|---|---|---|---|---|
| Spanish origin U.S. population[a] | 6,234 | 8,486 | +36.1 | 8.2 | 12.1 | +3.9 |
| Black U.S. population | 9,268 | 10,335 | +11.5 | 12.2 | 14.8 | +2.6 |
| Total U.S. population[b] | 76,066 | 69,956 | - 8.0 | N/A | N/A | N/A |

Note. Rounding may cause deviations in totals. Data sources: Information on Spanish origin poulation came from the Population Reference Bureau projections of all U.S. Hispanics other than insular Puerto Ricans (Bouvier, Davis, & Haupt, 1983) and the Puerto Rican Planning Board (1984) preliminary projections of insular Puerto Ricans. Black U.S. population and total U.S. population figures were calculated from data in Miller (1983) and the U.S. Bureau of the Census (1982). N/A = not applicable.

[a]Spanish origin U.S. population here includes insular Puerto Ricans, continental Puerto Ricans, and other Hispanics in the U.S.

[b]Insular and continental Puerto Ricans (and other Hispanics) are included in total U.S. population figure in the current calculation.

Table 4

Male Spanish Origin Accession Rates by Age and Ethnicity, circa 1980

| Age | Ethnicity | Total population[a] (in thousands) | Number of accessions[b] | Accessions per 1,000 |
|---|---|---|---|---|
| 17 | Insular PR | 34.8 | 184 | 5.287 |
| | Continental PR | 22.6 | 60 | 2.655 |
| | Total PR | 57.4 | 244 | 4.251 |
| | Other Hispanic | 144.9 | 282 | 1.946 |
| | All Hispanic excluding insular PR | 167.5 | 342 | 2.042 |
| | All Hispanic including insular PR | 202.3 | 526 | 2.600 |
| 18 | Insular PR | 31.5 | 505 | 16.032 |
| | Continental PR | 22.5 | 153 | 6.800 |
| | Total PR | 54.0 | 658 | 12.185 |
| | Other Hispanic | 143.9 | 813 | 5.650 |
| | All Hispanic excluding insular PR | 166.4 | 966 | 5.805 |
| | All Hispanic including insular PR | 197.9 | 1,471 | 7.433 |
| 19-20 | Insular PR | 58.4 | 621 | 10.634 |
| | Continental PR | 45.7 | 154 | 3.370 |
| | Total PR | 104.1 | 775 | 7.445 |
| | Other Hispanic | 298.9 | 955 | 3.195 |
| | All Hispanic excluding insular PR | 344.6 | 1,109 | 3.218 |
| | All Hispanic including insular PR | 403.0 | 1,730 | 4.293 |
| 21-22 | Insular PR | 51.7 | 336 | 6.499 |
| | Continental PR | 42.2 | 88 | 2.085 |
| | Total PR | 93.9 | 424 | 4.515 |
| | Other Hispanic | 286.7 | 357 | 1.245 |
| | All Hispanic excluding insular PR | 328.9 | 445 | 1.353 |
| | All Hispanic including insular PR | 380.6 | 781 | 2.052 |

Table 4 (Continued)

| Age | Ethnicity | Total population[a] (in thousands) | Number of accessions[b] | Accessions per 1,000 |
|---|---|---|---|---|
| 23-25 | Insular PR | 73.0 | 351 | 4.808 |
| | Continental PR | 60.1 | 102 | 1.697 |
| | Total PR | 133.1 | 453 | 3.404 |
| | Other Hispanic | 412.4 | 304 | 0.737 |
| | All Hispanic excluding insular PR | 472.5 | 406 | 0.859 |
| | All Hispanic including insular PR | 545.5 | 757 | 1.388 |
| 26-35 | Insular PR | 214.3 | 348 | 1.624 |
| | Continental PR | 158.9 | 44 | 0.277 |
| | Total PR | 373.2 | 392 | 1.050 |
| | Other Hispanic | 1,035.8 | 241 | 0.233 |
| | All Hispanic excluding insular PR | 1,194.7 | 285 | 0.239 |
| | All Hispanic including insular PR | 1,409.0 | 633 | 0.449 |
| 17-35 | Insular PR | 463.7 | 2,345 | 5.057 |
| | Continental PR | 352.0 | 601 | 1.707 |
| | Total PR | 815.7 | 2,946 | 3.612 |
| | Other Hispanic | 2,322.6 | 2,952 | 1.271 |
| | All Hispanic excluding insular PR | 2,674.6 | 3,553 | 1.328 |
| | All Hispanic including insular PR | 3,138.3 | 5,898 | 1.879 |

Note. PR = Puerto Rican.

[a]From 1980 Census (as of April 1, 1980).

[b]Actual FY 81 accessions (October 1980-September 1981) from computerized Army accession files provided by F. Grafton.

Table 5

Female Spanish Origin Accession Rates by Age and Ethnicity, circa 1980

| Age | Ethnicity | Total population[a] (in thousands) | Number of accessions[b] | Accessions per 1,000 |
|---|---|---|---|---|
| 17 | Insular PR | 34.3 | 9 | 0.262 |
| | Continental PR | 22.6 | 13 | 0.575 |
| | Total PR | 57.0 | 22 | 0.386 |
| | Other Hispanic | 134.3 | 25 | 0.186 |
| | All Hispanic excluding insular PR | 157.0 | 38 | 0.242 |
| | All Hispanic including insular PR | 191.3 | 47 | 0.246 |
| 18 | Insular PR | 31.7 | 38 | 1.199 |
| | Continental PR | 21.6 | 28 | 1.296 |
| | Total PR | 53.3 | 66 | 1.238 |
| | Other Hispanic | 131.7 | 116 | 0.881 |
| | All Hispanic excluding insular PR | 153.3 | 144 | 0.939 |
| | All Hispanic including insular PR | 185.0 | 182 | 0.984 |
| 19-20 | Insular PR | 62.7 | 48 | 0.766 |
| | Continental PR | 45.1 | 33 | 0.732 |
| | Total PR | 107.8 | 81 | 0.751 |
| | Other Hispanic | 274.7 | 124 | 0.451 |
| | All Hispanic excluding insular PR | 319.8 | 157 | 0.491 |
| | All Hispanic including insular PR | 382.5 | 205 | 0.536 |
| 21-22 | Insular PR | 56.9 | 39 | 0.685 |
| | Continental PR | 43.4 | 18 | 0.415 |
| | Total PR | 100.3 | 57 | 0.568 |
| | Other Hispanic | 263.0 | 54 | 0.205 |
| | All Hispanic excluding insular PR | 306.4 | 72 | 0.235 |
| | All Hispanic including insular PR | 363.3 | 111 | 0.306 |

Table 5 (Continued)

| Age | Ethnicity | Total population[a] (in thousands) | Number of accessions[b] | Accessions per 1,000 |
|---|---|---|---|---|
| 23-25 | Insular PR | 82.3 | 37 | 0.450 |
| | Continental PR | 64.2 | 6 | 0.094 |
| | Total PR | 146.5 | 43 | 0.294 |
| | Other Hispanic | 384.1 | 46 | 0.120 |
| | All Hispanic excluding insular PR | 448.3 | 52 | 0.116 |
| | All Hispanic including insular PR | 530.6 | 89 | 0.168 |
| 26-35 | Insular PR | 243.1 | 30 | 0.123 |
| | Continental PR | 177.5 | 10 | 0.056 |
| | Total PR | 420.6 | 40 | 0.095 |
| | Other Hispanic | 1,020.9 | 38 | 0.037 |
| | All Hispanic excluding insular PR | 1,198.4 | 48 | 0.040 |
| | All Hispanic including insular PR | 1,441.5 | 78 | 0.054 |
| 17-35 | Insular PR | 511.0 | 201 | 0.393 |
| | Continental PR | 374.4 | 108 | 0.289 |
| | Total PR | 885.5 | 309 | 0.349 |
| | Other Hispanic | 2,208.7 | 403 | 0.183 |
| | All Hispanic excluding insular PR | 2,583.2 | 511 | 0.198 |
| | All Hispanic including insular PR | 3,094.2 | 712 | 0.230 |

Note. PR = Puerto Rican.

[a]From 1980 Census (as of April 1, 1980).

[b]Actual FY 81 accessions (October 1980-September 1981) from computerized Army accession files provided by F. Grafton.

Table 6

Male Spanish Origin Accession Projections Age 17-35 by Age and Ethnicity

| Age | Ethnicity | Year 1980 | 1985 | 1990 | 1995 | 2000 |
|---|---|---|---|---|---|---|
| 17 | Insular PR | 184 | 175 | 180 | 175 | 185 |
| | Continental PR | 60 | 58 | 53 | 61 | 56 |
| | Total PR | 244 | 233 | 233 | 236 | 241 |
| | Other Hispanic | 282 | 255 | 292 | 317 | 362 |
| | All Hispanic excluding insular PR | 342 | 313 | 345 | 378 | 418 |
| | All Hispanic including insular PR | 526 | 488 | 525 | 553 | 603 |
| 18 | Insular PR | 505 | 545 | 545 | 529 | 545 |
| | Continental PR | 153 | 150 | 143 | 156 | 143 |
| | Total PR | 658 | 695 | 688 | 685 | 688 |
| | Other Hispanic | 813 | 746 | 831 | 921 | 1,045 |
| | All Hispanic excluding insular PR | 966 | 896 | 974 | 1,077 | 1,188 |
| | All Hispanic including insular PR | 1,471 | 1,441 | 1,519 | 1,606 | 1,733 |
| 19-20 | Insular PR | 621 | 702 | 681 | 659 | 670 |
| | Continental PR | 154 | 158 | 162 | 152 | 162 |
| | Total PR | 775 | 860 | 843 | 811 | 832 |
| | Other Hispanic | 955 | 901 | 978 | 1,022 | 1,201 |
| | All Hispanic excluding insular PR | 1,109 | 1,059 | 1,140 | 1,174 | 1,363 |
| | All Hispanic including insular PR | 1,730 | 1,761 | 1,821 | 1,833 | 2,033 |
| 21-22 | Insular PR | 336 | 383 | 357 | 364 | 357 |
| | Continental PR | 88 | 102 | 98 | 92 | 104 |
| | Total PR | 424 | 485 | 455 | 456 | 461 |
| | Other Hispanic | 357 | 380 | 352 | 370 | 430 |
| | All Hispanic excluding insular PR | 445 | 482 | 450 | 462 | 534 |
| | All Hispanic including insular PR | 781 | 865 | 807 | 826 | 891 |

Table 6 (Continued)

| Age | Ethnicity | Year 1980 | 1985 | 1990 | 1995 | 2000 |
|---|---|---|---|---|---|---|
| 23-25 | Insular PR | 351 | 361 | 404 | 394 | 380 |
| | Continental PR | 102 | 127 | 129 | 127 | 126 |
| | Total PR | 453 | 488 | 533 | 521 | 506 |
| | Other Hispanic | 304 | 352 | 325 | 355 | 376 |
| | All Hispanic excluding insular PR | 406 | 479 | 454 | 482 | 502 |
| | All Hispanic including insular PR | 757 | 840 | 858 | 876 | 882 |
| 26-35 | Insular PR | 348 | 356 | 365 | 385 | 387 |
| | Continental PR | 44 | 57 | 72 | 77 | 76 |
| | Total PR | 392 | 413 | 437 | 462 | 463 |
| | Other Hispanic | 241 | 327 | 383 | 385 | 388 |
| | All Hispanic excluding insular PR | 285 | 384 | 455 | 462 | 464 |
| | All Hispanic including insular PR | 633 | 740 | 820 | 847 | 851 |
| 17-35 | Insular PR | 2,345 | 2,522 | 2,532 | 2,506 | 2,524 |
| | Continental PR | 601 | 652 | 657 | 665 | 667 |
| | Total PR | 2,946 | 3,174 | 3,189 | 3,171 | 3,191 |
| | Other Hispanic | 2,952 | 2,961 | 3,161 | 3,370 | 3,802 |
| | All Hispanic excluding insular PR | 3,553 | 3,613 | 3,818 | 4,035 | 4,469 |
| | All Hispanic including insular PR | 5,898 | 6,135 | 6,350 | 6,541 | 6,993 |

Note. Rounding may cause deviations in totals. Data sources: 1980 accession figures are actual accessions in FY 81 from Army data files. Figures for 1985 and beyond are calculated by multiplying population projections by accession rates for three categories: insular Puerto Rican, continental Puerto Rican, and other Hispanic. For the other three categories (total Puerto Ricans, all Hispanic including/excluding insular Puerto Ricans) the number of projected accessions was obtained by addition and subtraction. See methods discussion in text. PR = Puerto Rican.

Table 7

Female Spanish Origin Accession Projections Age 17-35 by Age and Ethnicity

| Age | Ethnicity | Year 1980 | 1985 | 1990 | 1995 | 2000 |
|---|---|---|---|---|---|---|
| 17 | Insular PR | 9 | 8 | 9 | 9 | 9 |
| | Continental PR | 13 | 12 | 12 | 13 | 12 |
| | Total PR | 22 | 20 | 21 | 22 | 21 |
| | Other Hispanic | 25 | 24 | 27 | 29 | 33 |
| | All Hispanic excluding insular PR | 38 | 36 | 39 | 42 | 45 |
| | All Hispanic including insular PR | 47 | 44 | 48 | 51 | 54 |
| 18 | Insular PR | 38 | 41 | 40 | 38 | 40 |
| | Continental PR | 28 | 27 | 26 | 29 | 26 |
| | Total PR | 66 | 68 | 66 | 67 | 66 |
| | Other Hispanic | 116 | 115 | 126 | 139 | 158 |
| | All Hispanic excluding insular PR | 144 | 142 | 152 | 168 | 184 |
| | All Hispanic including insular PR | 182 | 183 | 192 | 206 | 224 |
| 19-20 | Insular PR | 48 | 52 | 50 | 48 | 50 |
| | Continental PR | 33 | 33 | 33 | 31 | 33 |
| | Total PR | 81 | 85 | 83 | 79 | 83 |
| | Other Hispanic | 124 | 124 | 135 | 141 | 166 |
| | All Hispanic excluding insular PR | 157 | 157 | 168 | 172 | 199 |
| | All Hispanic including insular PR | 205 | 209 | 218 | 220 | 249 |
| 21-22 | Insular PR | 39 | 43 | 40 | 42 | 41 |
| | Continental PR | 18 | 20 | 18 | 18 | 19 |
| | Total PR | 57 | 63 | 58 | 60 | 60 |
| | Other Hispanic | 54 | 59 | 57 | 63 | 69 |
| | All Hispanic excluding insular PR | 72 | 79 | 75 | 81 | 88 |
| | All Hispanic including insular PR | 111 | 122 | 115 | 123 | 129 |

Table 7 (Continued)

| Age | Ethnicity | Year 1980 | 1985 | 1990 | 1995 | 2000 |
|---|---|---|---|---|---|---|
| 23-25 | Insular PR | 37 | 39 | 42 | 41 | 39 |
| | Continental PR | 6 | 7 | 6 | 6 | 6 |
| | Total PR | 43 | 46 | 48 | 47 | 45 |
| | Other Hispanic | 46 | 53 | 53 | 57 | 60 |
| | All Hispanic excluding insular PR | 52 | 60 | 59 | 63 | 66 |
| | All Hispanic including insular PR | 89 | 99 | 101 | 104 | 105 |
| 26-35 | Insular PR | 30 | 31 | 32 | 34 | 34 |
| | Continental PR | 10 | 12 | 14 | 14 | 14 |
| | Total PR | 40 | 43 | 46 | 48 | 48 |
| | Other Hispanic | 38 | 49 | 57 | 60 | 61 |
| | All Hispanic excluding insular PR | 48 | 61 | 71 | 74 | 75 |
| | All Hispanic including insular PR | 78 | 92 | 103 | 108 | 109 |
| 17-35 | Insular PR | 201 | 214 | 213 | 212 | 213 |
| | Continental PR | 108 | 111 | 109 | 111 | 110 |
| | Total PR | 309 | 325 | 322 | 323 | 323 |
| | Other Hispanic | 403 | 424 | 455 | 489 | 547 |
| | All Hispanic excluding insular PR | 511 | 535 | 564 | 600 | 657 |
| | All Hispanic including insular PR | 712 | 749 | 777 | 812 | 870 |

Note. Rounding may cause deviations in totals. Data sources: 1980 accession figures are actual accessions in FY 81 from Army data files. Figures for 1985 and beyond are calculated by multiplying population projections by accession rates for three categories: insular Puerto Rican, continental Puerto Rican, and other Hispanic. For the other three categories (total Puerto Ricans, all Hispanic including/excluding insular Puerto Ricans) the number of projected accessions was obtained by addition and subtraction. See methods discussion in text. PR = Puerto Rican.

Table 8

Comparison of Total Army Accessions and Spanish Origin Army Accessions Age 17-35, circa 1980 and circa 1990

| 1980 | | | 1990 | | |
|---|---|---|---|---|---|
| Total | Spanish origin[a] | Spanish origin as percentage of total | Total[b] | Spanish origin | Spanish origin as percentage of total |
| 133,186 | 6,610 | 5.0 | 135,300 | 7,863 | 5.8 |

[a]Calculated from accession rates and multiplied by projections in Population Reference Bureau data (Bouvier, Davis, & Haupt, 1983).

[b]Calculated from figures in Elton's (1983) accession "objectives" for FY 89.

Table 9

Male Spanish Origin ESL Eligibility Rates Age 17-35 by Age and Ethnicity

| Age | Ethnicity | EMF match (A) | Adjusted by .828 (B) | FY 81 accessions (C) | ESL Eligibility rates (D = B/C) |
|---|---|---|---|---|---|
| 17 | Total PR | 6 | 4.968 | 244 | 0.0204 |
| | Other Hispanic | 1 | .828 | 282 | 0.0029 |
| 18 | Total PR | 104 | 86.112 | 658 | 0.1309 |
| | Other Hispanic | 6 | 4.968 | 813 | 0.0061 |
| 19-20 | Total PR | 377 | 312.156 | 775 | 0.4028 |
| | Other Hispanic | 27 | 22.356 | 955 | 0.0234 |
| 21-22 | Total PR | 213 | 176.364 | 424 | 0.4160 |
| | Other Hispanic | 16 | 13.248 | 357 | 0.0371 |
| 23-25 | Total PR | 146 | 120.888 | 453 | 0.2669 |
| | Other Hispanic | 18 | 14.904 | 304 | 0.0490 |
| 26-35 | Total PR | 78 | 64.584 | 392 | 0.1648 |
| | Other Hispanic | 10 | 8.280 | 241 | 0.0344 |
| 17-35 | Total PR | 924 | 765.072 | 2,946 | 0.2597 |
| | Other Hispanic | 78 | 64.584 | 2,952 | 0.0219 |

Note. ESL = English-as-a-second-language; EMF = Enlisted Master File; PR = Puerto Rican. Rounding may cause deviations in totals. Data sources: Enlisted Master File (EMF) matched with Basic Skills Education Program (BSEP) I ESL data file to obtain data by sex, age, and ethnicity; adjustment for missing data; FY 81 Army accession file.

Table 10

Female Spanish Origin ESL Eligibility Rates Age 17-35 by Age and Ethnicity

| Age | Ethnicity | EMF match (A) | Adjusted by .828 (B) | FY 81 accessions (C) | ESL Eligibility rates (D = B/C) |
|---|---|---|---|---|---|
| 17 | Total PR | 0 | 0 | 22 | 0 |
| | Other Hispanic | 0 | 0 | 25 | 0 |
| 18 | Total PR | 4 | 3.312 | 66 | 0.0502 |
| | Other Hispanic | 0 | 0 | 116 | 0 |
| 19-20 | Total PR | 12 | 9.936 | 81 | 0.1227 |
| | Other Hispanic | 0 | 0 | 124 | 0 |
| 21-22 | Total PR | 7 | 5.796 | 57 | 0.1017 |
| | Other Hispanic | 0 | 0 | 54 | 0 |
| 23-25 | Total PR | 6 | 4.968 | 43 | 0.1155 |
| | Other Hispanic | 1 | .828 | 46 | 0.0180 |
| 26-35 | Total PR | 5 | 4.140 | 40 | 0.1035 |
| | Other Hispanic | 2 | 1.656 | 38 | 0.0436 |
| 17-35 | Total PR | 34 | 28.152 | 309 | 0.0911 |
| | Other Hispanic | 3 | 2.484 | 403 | 0.0062 |

Note. ESL = English-as-a-second-language; EMF = Enlisted Master File; PR = Puerto Rican. Rounding may cause deviations in totals. Data sources: Enlisted Master File (EMF) matched with Basic Skills Education Program (BSEP) I ESL data file to obtain data by sex, age, and ethnicity; adjustment for missing data; FY 81 Army accession file.

Table 11

Male Spanish Origin ESL Eligibility Projections Age 17-35 by Age and Ethnicity

| Age | Ethnicity | Year 1980 | 1985 | 1990 | 1995 | 2000 |
|---|---|---|---|---|---|---|
| 17 | Total PR | 5 | 5 | 5 | 5 | 5 |
| | Other Hispanic | 1 | 1 | 1 | 1 | 1 |
| | All Hispanic | 6 | 6 | 6 | 6 | 6 |
| 18 | Total PR | 86 | 91 | 90 | 90 | 90 |
| | Other Hispanic | 5 | 5 | 5 | 6 | 6 |
| | All Hispanic | 91 | 96 | 95 | 96 | 96 |
| 19-20 | Total PR | 312 | 346 | 340 | 327 | 335 |
| | Other Hispanic | 22 | 21 | 23 | 24 | 28 |
| | All Hispanic | 334 | 367 | 363 | 351 | 363 |
| 21-22 | Total PR | 176 | 202 | 189 | 190 | 192 |
| | Other Hispanic | 13 | 14 | 13 | 17 | 16 |
| | All Hispanic | 189 | 216 | 202 | 207 | 208 |
| 23-25 | Total PR | 121 | 130 | 142 | 139 | 135 |
| | Other Hispanic | 15 | 17 | 16 | 17 | 18 |
| | All Hispanic | 136 | 147 | 158 | 156 | 153 |
| 26-35 | Total PR | 65 | 68 | 72 | 76 | 76 |
| | Other Hispanic | 8 | 11 | 13 | 13 | 13 |
| | All Hispanic | 73 | 79 | 85 | 89 | 89 |
| 17-35 | Total PR | 765 | 842 | 838 | 827 | 833 |
| | Other Hispanic | 64 | 69 | 71 | 78 | 82 |
| | All Hispanic | 829 | 911 | 909 | 905 | 915 |

Note. Rounding may cause deviations in totals. Data sources: For 1980 the formula involves FY 81 accessions from Army data file. For projection years 1985 on the formula involves accession projections. See methods discussion in text. PR = Puerto Rican.

Despite statistical adjustments for missing data, ESL projections reported here may still reflect some very severe undercounts in the original TRADOC ESL data base. Absolute figures for ESL eligibles probably should be higher. The relative growth trends for various groups, however, are probably fairly accurate.

Table 12

Female Spanish Origin ESL Eligibility Projections Age 17-35 by Age and Ethnicity

| Age | Ethnicity | Year 1980 | 1985 | 1990 | 1995 | 2000 |
|---|---|---|---|---|---|---|
| 17 | Total PR | 0 | 0 | 0 | 0 | 0 |
| | Other Hispanic | 0 | 0 | 0 | 0 | 0 |
| | All Hispanic | 0 | 0 | 0 | 0 | 0 |
| 18 | Total PR | 3 | 3 | 3 | 3 | 3 |
| | Other Hispanic | 0 | 0 | 0 | 0 | 0 |
| | All Hispanic | 3 | 3 | 3 | 3 | 3 |
| 19-20 | Total PR | 10 | 10 | 10 | 10 | 10 |
| | Other Hispanic | 0 | 0 | 0 | 0 | 0 |
| | All Hispanic | 10 | 10 | 10 | 10 | 10 |
| 21-22 | Total PR | 6 | 6 | 6 | 6 | 6 |
| | Other Hispanic | 0 | 0 | 0 | 0 | 0 |
| | All Hispanic | 6 | 6 | 6 | 6 | 6 |
| 23-25 | Total PR | 5 | 5 | 6 | 5 | 5 |
| | Other Hispanic | 1 | 1 | 1 | 1 | 1 |
| | All Hispanic | 6 | 6 | 7 | 6 | 6 |
| 26-35 | Total PR | 4 | 4 | 5 | 5 | 5 |
| | Other Hispanic | 2 | 2 | 2 | 3 | 3 |
| | All Hispanic | 6 | 6 | 7 | 8 | 8 |
| 17-35 | Total PR | 28 | 28 | 30 | 29 | 29 |
| | Other Hispanic | 3 | 3 | 3 | 4 | 4 |
| | All Hispanic | 31 | 31 | 33 | 33 | 33 |

Note. Rounding may cause deviations in totals. Data sources: For 1980 the formula involves FY 81 accessions from Army data file. For projection years 1985 on the formula involves accession projections. See methods discussion in text. PR = Puerto Rican.

Despite statistical adjustments for missing data, ESL projections reported here may still reflect some very severe undercounts in the original TRADOC ESL data base. Absolute figures for ESL eligibles probably should be higher. The relative growth trends for various groups, however, are probably fairly accurate.

Table 13

Comparison of Total Spanish Origin Accessions and ESL-Eligible Spanish Origin Accessions in 1980 and 2000, Age 17-35, by Sex

| | 1980 | | | 2000 | | |
|---|---|---|---|---|---|---|
| | Total Spanish origin | ESL eligible | ESL eligible as percentage of total Spanish origin | Total Spanish origin | ESL eligible | ESL eligible as percentage of total Spanish origin |
| Males | 5,898 | 829 | 14.1 | 6,993 | 915 | 13.1 |
| Females | 712 | 31 | 4.4 | 870 | 33 | 3.8 |
| Total | 6,610 | 860 | 13.0 | 7,863 | 948 | 12.1 |

Note. Data sources: See Tables 6, 7, 10, and 11.

Despite statistical adjustments for missing data, ESL projections reported here may still reflect some very severe undercounts in the original TRADOC ESL data base. Absolute figures for ESL eligibles probably should be higher. The relative growth trends for various groups, however, are probably fairly accurate.